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Edited by FAYETTE J. CLUTE

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FAYETTE J. CLUTE, Editor

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An Enthusiast's Experience

By Samuel Adelstein

With Illustrations by the Author

EDITOR'S NOTE: *The following article has been written under the protest of its author, who insists that his short acquaintance with photography makes it seem presumptuous for him to attempt to benefit others, many of whom have had considerable longer experience than himself. By insisting that the setting down of his photographic experiences did not in the least imply a dogmatic attitude on his part, his disinclination has been somewhat overcome. We trust our readers will find as much to interest in this article as we ourselves have in the success of Mr. Adelstein's habitual practice of asking all the photographic questions allowable at every possible opportunity, despite his extreme modesty in other directions.*

I had always felt a keen interest in photography, always been desirous of taking it up; but, until about two years ago, circumstances were such that I could not devote the time I believed was necessary in order to do the subject justice. But when, one day about that time, an amateur photographer, or at least a non-professional, friend, took a portrait of me that proved to be not only just as good, but better than much professional work that I had seen, I decided to begin.

But how and where? I had previously attended several of the California Camera Club's monthly lectures and naturally my newly augmented interest sent me in the direction of the Club's rooms. Hunting up the friend who had favored me with the lecture tickets, a visit of inspection was made. I found an elaborate and complete equipment of apparatus, an extensive photographic library, files of all the photographic magazines, and these I learned were all at the disposal of the active members of the Club. It was easy to see that here was the place to make a proper start under the most favorable auspices.

About a month after my initiation into the Club, my first camera, a 2¼x3¼

Ansco Vest Pocket, using roll film, was purchased. I shall never forget the sensation experienced when developing my first roll of film. How I yanked that slippery strip of film up and down, as if the success were to be in proportion to the activity shown, straining my eyes into the unaccustomed dim red light to see what was going to happen. How time and again one end of the pesky thing would slip out of my fingers, how the developer splashed all over the sink, and finally how wonderful it all seemed when an image began to make its appearance. The film was fixed and washed, all according to carefully absorbed instructions, and I could hardly wait for it to dry so that prints could be made.

MY FIRST PICTURE

A short experience with this film camera and I felt that I wanted one in which I could use plates; and, more important, it seemed to me, one having a focusing screen so that I could see what I was doing in the way of focusing. I wrongly blamed the finder for a good part of my ill success, so put this excellent camera to one side and made a new investment in a 3¼x4¼ film pack and plate camera with an extension bellows and an f-6.8 Sylvar lens in a Compound shutter. My results were much better; but from the very beginning I had set my mind upon a Reflex camera; and, like the boy in the soap advertisement, I was not to be happy until I got it. I had not invested in one at first, as I felt that it would be wise to gradually work up to it. But now it was different, and so, after making thorough investigations of the various makes on the local market, I boldly invested in a 3¼x4¼ Reflex, fitted with an f-4.5 Carl Zeiss Tessar lens.

I have been more than satisfied, more than pleased, with the performance of this camera. I have carried it over the Sierra Nevada and Coast Range Mountains, in all kinds of weather; cold, heat, dust and wind, and it never failed me. This style of camera is popularly supposed to be good only for speed work. That is a common fallacy that can easily be disproved by a very superficial investigation. To my way of thinking, it is the best all-round camera that one can possess. With it, one can do speed work, view work, portraiture, anything. Mine weighs but four pounds and is perfectly stable when used on a light metal extension tripod with a universal head that permits a wide range of positions.

I have tried both tray and tank development, but give me the tank every time; it is a joy and comfort. I use Standard pyro plate developer, fifteen minutes at sixty-five degrees Fahrenheit. When I know my exposures are normal, I make up the developer normal strength. When I think they are under-

exposed, I increase the amount of developer, and when I have reason to believe my exposures are over, I decrease it, keeping the time and temperature the same fifteen minutes and sixty-five degrees, in all cases. Most amateurs who have tried to develop Standard Orthonons in a tray appreciate the difficulty of judging when the plate is properly developed, but the tank method obviates this.

One of my greatest difficulties was to judge the proper exposure to give various subjects and different lightings, and until I procured a "Wellcome's Exposure Record" I was practically floundering about in the dark with my results often most disappointing. Several meters were tried, but it was so difficult for me to match the changing tint with the standard one that I gave it up in despair. But now I swear by the Exposure Calculator in the back of the "Wellcome Exposure Record", and, in case of doubt, reinforce with the decision of the "Imperial Exposure Record". I have found that the indicated exposure time of the Wellcome's Calculator and the Imperial Meter, when compared, were almost identical. The latter especially is useful in the early morning or late afternoon when the light is changing rapidly.

"AS BENDS THE REEDS"
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There is one difficulty connected with the use of these or any other exposure meters, and that is the proper classification of the subject to be photographed; in other words, determining whether it be "light foreground", "strong foreground", distant landscape" and the like. I find that the best way to go about this intelligently is to keep a record of exposures, and when in doubt, compare the subject with some previously photographed one of which a record has been made. With a fair degree of accuracy in classifying one's subjects according to the table given on the face of the exposure calculator, all that one requires,

"THE MIRROR OF PROPHECY" Copyrighted 1917 By SAMUEL ADELSTEIN

as far as exposure is concerned, is a knowledge of the speed of the plate being used. The calculator gives one the correct exposure, and with tank development the making of negatives that are technically good, becomes mechanical; pictorial quality is, of course, dependent upon the artistic ability of the photographer himself. The pictorial worker can, by knowing the correct exposure, produce certain effects by slightly over or under-exposing, as the case may demand, and be assured of the desired effect. The exposure calculator also comes in quite handy in determining just how short an exposure is permissible on a speed subject when a poor light makes the matter problematical.

When it comes to the proper use of filters, I confess I am still in a quandary. We are given so much conflicting advice from authoritative sources, so many contradictory articles are written by those who stand high in the photographic world, that the tyro is not to be blamed for being somewhat bewildered, not knowing which way to turn. My own experience with filters has not been satisfactory, but I propose to continue experimenting. The only filter that has given me any degree of success is the Kodak Sky Filter, and this I find excellent in retaining such clouds as may be in evidence. The directions sent out with it advise giving double exposure, but I do not increase mine in the least and get excellent results.

Since joining the California Camera Club I have always found my fellow members, even those most advanced in the art, invariably obliging and willing and never too busy to answer questions, render assistance and even give demonstrations calculated to assist and advance the beginner. The Club exhibitions of

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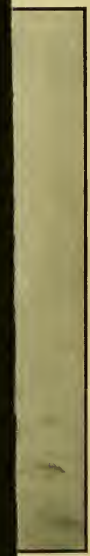

LSTEIN

Finding The Weak Links

By Charles F. Rice

"A chain is no stronger than its weakest link," they say, and it sounds reasonable.

A man sent his camera to me the other day, with a couple of rolls of film and a message asking me to try it out and see what was the matter. He sent also several weak and anemic prints, the results of his earnest efforts, and stated that they were the best he could get, and he couldn't seem to locate the trouble. The pictures were snapshots of a child on a piazza, and there were unmistakable signs of under-exposure. In fact, they were very badly under-exposed.

Snapshooting on a shady piazza is a precarious practice, and even under the most favorable circumstances there is a likelihood of under-exposure. I have done a good deal of this sort of business myself and have had under-exposure with a lens opening of f-4.5 and an exposure of one-tenth of a second, when the light was a little weak. Still, as I looked over the camera that had been left with me, I saw that it ought to be well able to cope with unfavorable light conditions. The lens had an aperture of f-5.5, and the shutter was a focal plane, capable of giving as slow an exposure as one-tenth of a second. Here was a combination of great light-passing capability. I tried it on my own piazza, which is pretty well shaded by trees, and got ample exposure. Even inside the house, near a window, I got a much more fully timed picture than those which my client had sent me.

What was the trouble? Simple enough as I found afterward. Instead of using the lens wide open, he had used it at f-11. This was to get greater depth of focus, because, as I discovered, the focusing scale was improperly marked; and, instead of getting that corrected, he had been stopping down the lens in order to get the desired sharpness. And instead of using the shutter's lowest speed of one-tenth of a second, he had set it at one-twenty-fifth, because he had difficulty in holding the camera steady enough for the slow exposure. What had the gentleman unwittingly sacrificed in the way of light action? Figure it out. F-11 allows only one-fourth the volume of light to pass that f-5.5 does, and one-twenty-fifth second is two and one-half times as quick as one-tenth. Two and one-half times four is ten. Nine-tenths of the possible light action had been thrown away! It was no wonder that his pictures suffered from under-exposure; the wonder was that he got any pictures at all. His "weakest link" was his exposure, and that is a very, very important link.

I want to tell you about a weak link of my own. Yes, indeed; my own photographic chain is frequently weak because of defective links. It is a wholesome thing for an old stager like myself to fall down once in a while. If something of the kind didn't happen to me occasionally, I should think I was

approaching a state of photographic perfection, and that would be fatal to further progress. We learn by our mistakes.

This was a bad fall I had. The film was very slow to come up in the developer. I was see-sawing it in a tray, and I began to be anxious because the exposures were some I wanted particularly to be all right. They were made in a big camp, showing some of our home town soldier boys, just before they started for the south, and I shouldn't have another chance. I doubled the strength of the developer by adding from the bottles of stock solution. But that didn't seem to make much difference. I was getting desperate, you see, and acted like a drowning man grasping at a straw; for this use of strong developer is no good for under-exposure, and I knew it. Well, not to string the story out too long, the negatives simply refused to develop anywhere except in the strongest lights of the picture, the sky and portions in bright sunshine. There was no shadow detail whatever. Was I agitated? Yes, very. The fervent remarks that I made there in the dim red light, as I continued to see-saw the hopeless film up and down in the developer, would not grace these pages. In taking those pictures I had been very careful to avoid anything which might give comfort to the enemy, and now, alas, they would never afford comfort to anybody!

After the spoiled film had been sadly consigned to the ash can, I carefully checked up everything I had done, and couldn't find any mistake. But a few days later I discovered the weak link. I tried to develop a film for a friend, using some of the stock solution from the same bottles as in the former case, and it wouldn't develop. "Ah", I thought to myself, after a couple minutes' see-sawing, "Jake's shutter has gone back on him again, and here's the whole film with nothing on it". Then as a last resort, I tried stock solution out of other bottles that had been freshly mixed, and the film yielded six good negatives. You see now what I saw then. And it didn't comfort me any nor add to my self esteem. There it was, printed right on the little sheet of directions that came with the film: "We do not recommend the use of stock solutions by amateurs, as they are apt to lose their strength if allowed to stand for any length of time".

Another puzzling thing I encountered not long since. I made some enlargements and they were all covered with tiny white spots. There were over sixty prints in the lot, and it took me something more than twenty hours with brush and spotting colors to touch out the little spots. At first I laid it to dust on the negatives. Looking closely at the films, I could just make out the minute black specks, but when I tried to brush them off they wouldn't go. Still closer inspection showed that whatever it was seemed to be imbedded in the back surface of the film. I puzzled my brain again without a result, and finally wrote to the makers of the film, enclosing a negative, and asking them if I had done something wrong, or if the film was defective. In a few days a courteous letter came, saying that the spots were due to no fault of mine. Another weak link, you see, but not mine this time; and my disposition was mean enough to derive considerable satisfaction from the thought.

The photographic chain has many links. If any one of the links is weak

the chain breaks, and you get poor photographs or none at all. Sometimes the defect is most obscure, as in the case of the spots on the film. But this was really an extraordinary case, something you might not run across again in a lifetime. It is very seldom indeed that a big manufacturer allows defective goods to get on the market. He is too jealous of his reputation. In most cases we do not have to go far in checking up the possibilities of mistake to find that indeed "we have left undone those things which we ought to have done; and we have done those things which we ought not to have done".

The "Shipman Process" Enlargements

By Joseph Shipman

With Illustrations by the Author

EDITOR'S NOTE: *Months ago our attention was called to the excellent quality of the enlargements being turned out by the Shipman Photo Process Corporation of Los Angeles. As the superior results secured forms the basis upon which this firm has achieved a national reputation among large buyers of such work for theatre lobby display, commercial use, and the like, it is not expected that Mr. Shipman, the inventor of the process, is ready at this time to explain just how the better results are secured. But, believing that our readers would be interested in knowing what is being done along this line and in reading what the inventor has to say on the subject, we present the following, so kindly furnished in response to our request.*

Some two years ago I came to a full realization of the inconsistency of producing enlargements that lacked absolute sharpness when enlarging only a few diameters from a sharp negative. I could find no reason to doubt my conviction that a sharp negative was capable of giving, and properly used should give, a correct reproduction, regardless of size, up to the point where the minute silver atoms forming the image in its emulsion actually began to separate and disclose themselves.

Setting about the work of overcoming the trouble, resulted in a measure of success that has at least proven my conviction to be well founded. There is little that I can offer further than this assurance and the advice that, instead of resting satisfied with inferior results one should know that better work was possible and act thereon. Were I watching a photographer make an enlargement, and, when he was perfectly satisfied he had it sharp, I told him it was not sharp, he would not believe me unless I could, right then and there, make it sharp, so unquestioning are they in the matter of their equipment and their methods. Were I, however, to bring him an enlargement of the same size as his, made from the same negative, and compare the two, he would admit that mine was considerably sharper; and so it will be until he gives the matter his attention, or I describe just how the better results are secured, which last is impossible at the present time.

And while the above savors of commercialism, perhaps suggests a desire

to dispose of this new method, such is not the intention. Our plans contemplate only the making and marketing of enlarged work, and not the sale of the process or method by which that work is produced. This understood, as also the Editor's desire to call attention to an advance that has been made along this line; will, I trust, induce the reader to accept what little I can offer as kindly as it is intended. Any explanation that I might give regarding the necessity of having the lamps, lens, etc., perfectly parallel, would only be a repetition of what is urged in every little hand-book on the subject, and would, I fear, receive the same scant attention. But the securing of all possible exactness of control is the only way in which one's work can be improved.

"In what way does your process of enlarging differ from the usual or regular method generally used?" and "In what way are your results better?" These two questions I am asked, almost daily, by professional photographers, amateurs, and those interested in commercial work.

To the first I would answer that the process is based upon scientific accuracy of control, achieved mainly by an attachment that can be placed upon any regulation outfit; one which, when adjusted, makes it a simple and definite matter for the ordinary photographer to make perfect enlargements in accordance with the negative used. In fact, anyone capable of correct focusing and timing can make as perfect an enlargement as the most expert workman, because he will be working along purely mechanical lines in the handling of the entire equipment.

As to the second question; it naturally follows that if one's control of equipment is at all times perfect, his enlargements will be sharper, richer, and clearer. They will contain finer definition and better values, regardless of the sizes attained. This is in direct contrast to the present-day methods of enlarging with its many limitations. And, before going further, let it be understood that I am dealing only with the matters of sharpness, focusing and general values secured before development; for if the value is not in the exposed print it cannot be "developed" in, though it may be aided to some slight degree.

As stated, my research along these lines was started some two years ago as a result of accidentally discovering that the present-day method of enlarging, as used by all concerns, is not based upon any definite or scientific consideration of the principles involved. This want of accuracy, due no doubt to a lack of knowledge that mechanical perfection of control is possible, is conclusively proven by the fact that a given number of photographers, using precisely the same equipment from lamp to lens, including paper and plate, will produce an assortment of enlargements varying from good to bad,—but none perfect. This lack of accurateness and quality is not particularly noticeable in head and shoulder work, but becomes more pronounced on full figures, groups and landscapes, while in maps, line work and general commercial photography it is perfectly plain to even the casual observer. I might add that the usual lack of perfect sharpness is not noticeable where the subject is enlarged only a few times, but becomes correspondingly plainer the larger the projections are made.

If one's equipment is mechanically accurate, he can secure a perfectly sharp 16x20 foot enlargement from an 8x10 inch negative, possibly larger, and still retain the richness and roundness necessary for so large a picture. In our

8x10 ENLARGEMENT of twelve diameters from central portion of an ordinary moving picture negative film; making our reproduction an enlargement of six diameters

PRINTS FROM MOTION PICTURE NEGATIVE FILM, actual size, and enlargement of a portion from each, actual size, to show the good quality obtainable in a thirty times enlargement or one of the entire film made 24x30 inches

own plant it is an almost daily occurrence to turn out six, seven, eight and sometimes nine foot enlargements from 5x7 copy negatives, these for theatres, moving picture and commercial requirements.

There are several methods of testing out one's equipment, but perhaps the simplest procedure is to draw several perpendicular black lines on a 5x7 clear glass plate and project these up to six or seven feet, focus sharply for the center, then stop down to the smallest stop, exposing test pieces of bromide paper in the center and at the extreme ends of the image. The result may cause somewhat of a shock, but it is proof positive as to the values, or lack of values, one is obtaining in all his larger work. One will also find that the exposure has been considerably less on one or both of the end test strips than on the center one, thereby proving that the light is not evenly distributed, causing underexposure, as well as loss of sharpness, as the corners are approached.

It is not always possible, even with a perfect equipment, to produce a perfect enlargement. The negative must be made with that end in view and care taken to make it universally sharp. Many of the negatives supplied us, as well as prints from which to make copy negatives for enlargements, are lacking in this respect. Our process, however, saves us from further increasing this confusion; whereas, the ordinary enlargement shows both the original lack of sharpness in the negative with the further confusion of inaccurate projection, causing very much out-of-focus corners in an enlargement that otherwise could be considered a good print.

PART OF AN 84x120 (7x10 FEET) ENLARGEMENT from a 4x6 negative; being an enlargement of twenty diameters or four hundred times. Would go thirty diameters and still maintain all values

PART OF AN 84x120 (7x10 FEET) ENLARGEMENT from a 4x6 negative; being an enlargement of twenty diameters or four hundred times. Would go thirty diameters and still maintain all values. Even as reduced to our page size the enlargement is eight diameters or sixty-four times the size of that part of the original negative

Numerous professionals, on examining our work, have remarked: "You must have a wonderful lens", yet I can state that the lens is only of relative importance and is by no means to be credited with the results obtained. Our equipment does not include a lens that cost to exceed one hundred and twenty-five dollars when new, and there are many other makes of lenses that would find greater favor with photographers generally.

We have in our office at the present time several 16x20 inch sections of an 8x12 foot enlargement from the same 5x7 negative, one of which is easily recognized as made by our process, while the others are by different well known photographers, including perhaps the largest distributor of such goods in America. These prove quite conclusively that there is an opportunity for much research and progress in the enlarging field. While for obvious reasons and until some patents are granted, I cannot outline my own method of overcoming the troubles pointed out, I trust I have, by these few examples and plain statements, suggested to the reader that there are still greater possibilities along the lines of general enlarging than has heretofore been thought.

What I mean by art is some creation of man which appeals to his emotions and his intellect by means of his senses. All the greater arts appeal directly to that intricate combination of intuitive perceptions, feelings, experiences and memory which is called imagination.—William Morris.

Mr. Steadman's "System"

By R. Stuart Browne

Mr. Steadman's articles in the September and October issues seem to demand a reply and my reason for not sooner accepting the challenge has been that I hoped to find that a more capable contender was willing to take up the gauntlet. I have an idea that the reason his claims have not as yet been disputed is because they have not, quite naturally, been taken very seriously, seeing that he himself refutes, almost directly, some of the strongest ones made.

The one statement or claim that Mr. Steadman seems to emphasize most strongly and finds the most delight in making, is that: "The law of inverse squares is in no way a law of light intensity", but this he proceeds to disprove by saying that that law is applicable only when "the illuminated surface is at least as distant from a sharply defined light source as the diameter of that source". In this Mr. Steadman admits that the law of inverse squares is applicable and true for a point source, and he might easily have extended his exception and explained, as do all the text books, that the law of inverse squares fails to give accurate results when the illuminated or receiving surface is situated at a distance less than twenty times the diameter of the source. Had he done this, and at the same time withheld his denouncement of the law of inverse squares, there would have been no grounds for a controversy as he would be in perfect accord with the teachings of the text books on physics and the schools that employ them, both of which he so roundly scores.

And in trying to disprove the law of inverse squares, Mr. Steadman is equally fallacious. He says: "Let us imagine a light spreading from a point source and shining upon a circular surface one meter in diameter and one meter distant. Such a surface would receive practically one-sixteenth of the total light radiating from the point". So far he is "practically" correct and were the receiving surface made spherical so that every part thereof was exactly one meter from the point source, it would intercept exactly one-sixteenth of the light, and in this there is no disproof of the law. But he continues: "If the law of inverse squares were really true for such light, at one-half meter distance, the same area should receive four times one-sixteenth of it, or one-fourth of it, and at one-fourth meter it should again receive four times one-fourth of the total light or all of it". Truly a most remarkable statement for the reason that such a surface at such a distance, were the surface so curved as to bring all parts of it at the given distance from the point source, would completely surround that source and, of course, intercept all light emanating therefrom, and therefore, this also fails to prove the incorrectness of the law of inverse squares.

As Mr. Steadman, despite his contention, really subscribes, as I have shown, to the truth of the law of inverse squares, let us inquire concerning his claims that it is not applicable to photographic problems. I am willing to admit that,

the law, applying as it does to either a point source or to a surface source of a lesser diameter than one-twentieth the distance of the receiving surface, while the photographer deals mainly with surface sources of a greater area, is somewhat limited in its direct applicability. But this law, nevertheless, is found most useful in such problems as those involved in the use of a pinhole "lens", the making of enlargements, the projection of lantern slides, the illumination of a dark-room, and the like. Mr. Steadman might quite rightly claim that the law of inverse squares was not particularly helpful in a great majority of the problems confronting the photographer, but such being a fact does not justify his assertion that as a law it is entirely erroneous.

There is, I am led to believe as I give this matter more examination, another good reason why no one has as yet pointed out the discrepancies in Mr. Steadman's contentions. It can hardly profit anyone to enter into an argument upon a question as long as there is not an agreement upon the premises. As no student of physics can agree with Mr. Steadman's statement that: "The law of inverse squares is in no way a law of light intensity", no such student has come forward. While I myself do not claim to any deep knowledge of either the theory of light action or the laws governing, I realize fully that it is only Mr. Steadman's own refutation, as pointed out, and the futility of his proof, as also pointed out, which makes it possible for me to anticipate any benefit to result from allowing myself to be drawn into a controversy. In fact, there is no controversy except as Mr. Steadman controverts himself, leaving me the simple task of pointing out wherein he does so and making known to which side of his personally conducted controversy I am in accord, in common, with the text books and schools which he so boldly denounces as in error.

Mr. Steadman has devised, or perhaps I should say, evolved, a most excellent exposure determining device or system, one which I have taken much interest in employing, and one which has afforded me much satisfaction by reason of the correctness of its results. His use of the word "actino" as a unit of light intensity is not objectionable, although hardly necessary, except as a vehicle for expressing a certain factor in the exposure calculations involved with his particular form of meter. Removing the sensitive surface a distance behind the exposure opening of the meter has the advantage of minimizing the misleading effect of extraneous light, and in this there is no small advantage.

As to the claims of great simplicity which Mr. Steadman puts forth for his "system", I am not prepared to voice my full accord. There is, he should remember, a decided difference between the degree of such fancied simplicity as an attribute of a "system", in the mind of the one who has used it daily for a number of years; in fact, evolved it from his own method of working; and, the simplicity which it presents to the man who meets with an explanation of its working for the first time. And furthermore, asking the latter to believe that the text books and schools have imposed upon him a law that is no law, does not lessen this difference. Because the system is simple to Mr. Steadman is no reason why it is simple for another, and because the former has learned that the books on physics are wrong, while the latter is ignorant of that error, is no explanation of the difference. Still further, I must protest against his

method of endowing his system with a deceptive simplicity as he does, in saying that in computing the exposure for f-8 from the known exposure for f-16, he did no squaring, but simply used the knowledge that f-8 has four times the working value of f-16. There can hardly be a more simple way of determining the ratio than by squaring and one need only ask Mr. Steadman to apply his more simple method to the determination of the ratio between the exposure required for a lens working at, let us say, f-5.65 and one at f-6.3. A simplicity secured by avoiding the more difficult problems is only a deceptive one. The photographer who uses but one lens can, no doubt, change the numbers on the stops to accord with some arbitrary notation more conveniently incorporated into some given exposure system, to advantage; but the worker using several lenses, even be they all marked with the f system, will find the squaring of these f numbers of considerable assistance to him in solving the problems that will arise in their use.

Learned By Experience

By Max F. Long

Use a Lens Hood

Did anyone ever ask why you did not hood your lens when you made those out-of-door pictures? It's a good question to ask, and the main necessity for it lies in the fact that a lens hood is a nasty thing to try to make, troublesome to carry, never seems inclined to stay in place, and so on.

Now, seriously, is it any reason for lowering the percentage of "good plates" to neglect the use of a lens hood just because one cannot put the old view camera into its case without taking the hood from the lens? A four-sided, square funnel, made of black paper, backed with thin cardboard and hinged at the corners or where the sides join, with strips of black cloth, forms a lens hood that will fold flat and go into the case almost anywhere. Rubber bands passed through the sides of the hood with one end slipped over the head of a small screw in the top of the frontboard, and the other end over a like screw below, so that the stretched bands will hold the hood over the lens with the opening and square level with the plate, keeps it in position. This form allows one to hood the lens more closely than does the round hood and will prove itself a wonderworker when one is contending with a glaring light or where an open sky throws light into the lens.

Few indeed of the camera users realize the advantages of the hood, but if anyone doubting its need will but observe what it does for his eye when he looks at a view through even the tube of a half closed hand, he will realize what such a help might do for the less perfect eye of the camera. The only reason why manufacturers do not hood the lens on their small hand cameras is because the hood will not fold with the camera; or, in the case of large cameras, go well

BERKELEY AND THE BAY BEYOND By CHARLES L. SNYDER

into the case. The difference between good and bad long-distance views is a matter of how little or how much light is allowed to reflect back into the unsquinting eye of the camera. The great success of the ray filter on distant landscapes is often due to the fact that the filter acts as a lens hood. Our friends, the movie cameramen, have long since satisfied themselves as to the difference between hooded and unhooded lens work, admitting the hood to be of great importance; and, as a class, they are pretty good photographers, even though they do not retouch.

What Causes Duratol to Curdle

An old bottle of developer in the dark-room is now looked upon with considerable interest since the prices have made such an advance. I found three ounces of Duratol in mine, some which I had failed to use because, in making it up the first time, despite all my care, the solution turned to curd. I truly desired to use the remaining three ounces of the developer, but for a time my ill success deterred. I could find no one who could help me until my scale spoke up and asked if I had been careful not to use too much of the Duratol. I mixed up the formula, with the exception of the Duratol, which last I dissolved separately in a part of the water called for. Then, while stirring the main solution, I added the latter to it, little by little. When about two-thirds of the Duratol solution had been added, the mixture showed signs of clouding, so I stopped then and there and tried it out, finding it worked "to the queen's taste". Do not get too generous when making up this developer, as a touch too much Duratol curdles the solution, throws down the sodas and ruins it.

Duratol, by the way, is in a class by itself; it won't mix with much of anything else, has a smell of peach pits and, best of all, keeps one's prints free from abrasion marks. I experimented on various papers with the one formula which is given as universal by the makers, and found it worked splendidly with practically all of them.

Another developer which works well with nearly all papers is Amidol. This developer must be used as mixed, but using Amidol and sulphite of soda,

with a drop of bromide, it is no trick to mix it. For bromides it has given me superior results and for all makes of plate and film, it is equaled only by the Pyro-Metol formula for softness and snap. It is the fool-proof developer, as the amount of water used changes nothing but the speed of development, and a wide variation in the proportions of soda or Amidol used also seems to be a matter of little importance.

That Stale Fixing Bath Odor

The acid in the fixing bath frequently keeps the studio perfumed with a dead odor of sourness. This does not bother the photographer, but is always noticed by his customers, who are ignorant of the source and its significance. The addition of a few drops of what may be called a neutralizer to each gallon of the fixing bath has proven a great help in overcoming the trouble. This deodorizer is made by adding a little oil of cloves to some gasoline, about ten drops of the oil to each ounce of gasoline. This can be altered to suit the taste by using oil of wintergreen or oil of cinnamon, and also by varying the amount of oil used, but it will scent the prints if used too strong. A few drops of the mixture is to be added to the fixing bath whenever the scent of acetic acid is noticed. It has no effect on the working of the bath, but the atmosphere of the workroom and studio is changed and freshened wonderfully.

Trouble With the Flash

When the photographer says: "Everybody quiet now!" and pulls the trigger and the flash does not ignite, he is "in bad". In flashing groups, many an embarrassing moment may be saved by giving a little attention to the firing device in one's flash pan. If using the Victor Spreadlite or similar type of flash gun that uses a paper cap to ignite the powder. Occasionally try setting off a cap without any powder. If it does not fire, examine the small metal finger that stands on top of the cap. As a result of being pounded by the hammer this often becomes bent up so that the hammer no longer strikes the finger with a stiff enough blow to ignite the cap. Bend the finger down a little, and if it is pointed or battered, take and file it to a wedge shape, and in that way obtain a firing surface which will discharge any cap that has not gone to seed. I have blamed my caps and tried several new lamps that set off the flash with everything from electricity to sparking metal; but, when I located the cause of my trouble and fixed up the cap pan, the old one proved the best of all. I think the rest of the boys are sufficiently mechanical to see the point and fix up for the next dance or church social flash; or perhaps the local barnstormers will give "East Lynn"—who knows.

Objects have no interest for the camera for their own sake, it takes no account of characteristics; a prospect extending to illimitable distance might all be on a flat upright plane for all the instrument cares, it does not trouble itself whether things are alive or inanimate; it only concerns itself with reflections of light. These, according to their particular shapes and degrees of intensity, are what it records. It is the artist who feels the sentiment of the scene—the instrument is impervious to such influences—and he, in preparing his picture, will bring in the personal note, imparting a human interest.—Antony Guest.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

SOME BARGAINS: Most of the stock houses handle second-hand lenses, particularly the larger and older ones doing a jobbing business. Just recently I sent and got a 14x17 Harrison & Schnitzer rapid rectilinear of seventeen inches focus and working at f-8, for ten dollars. While it does not look very pretty, it does the work, and its typical curved field of the rectilinear gives me fine results on roadways, creek scenes and the like, where the foreground and the sides of the picture make the field a dished or curved one. The nice long focus on my 6½x8½ camera is just what I want, to avoid the violent perspective of roadways and streams, and the brilliancy is very pleasing. Some dealers refuse to buy these old rapid rectilinears at any price, but if the average photographer knew what fine lenses they were for some kind of work, they would be in great demand.—S. D. F., Georgia.

THE DISPLAY AT THE DOOR: Last summer I had a young chap working for me who seemed to be a natural born advertiser. Early in the season he drove out in the country and made a picture of Mr. W.'s large new tractor, the first one of the kind in the county, asking for no orders but simply for the privilege of putting one in the show case at the door. People from all over the county came around to look at the picture, having heard of the tractor and the fact that a picture could be seen at my place. Several orders resulted, but the main result was the advertising I got out of the picture. A few weeks later another picture made its appearance, this time of a large log that was cut a few miles away and hauled to the railroad on the running gear of three wagons. Other interesting pictures followed, and before the season was over, it became the practice of all visitors to town, as well as the home people, to come around regularly and see what I had on display.—T. G. B., Vermont.

THOSE SPOTTY WOOD SCENES: We have all of us made those roadways through the woods, interiors the painters call them; and, while they looked very pleasing to the eye, the print showed such a spotted effect of sunlight that all depth or perspective was lost and the composition and massing made simply impossible. The other day I took one of these negatives, made an enlargement, worked it up with a bit of crayon, and then copied the result to get a new negative. The result was most gratifying, particularly when it is considered how easy it is to do the work required. Spotted patches of light on a roadway and in the branches of trees require only the roughest kind of treatment in order to suggest the rough ground surface and tree foliage. Some of the white patches were filled up entirely, others only toned down, and a few of the rightly placed ones left untouched. The difference between prints from the new and the original negative is surprising.—E. D. C., Vermont.

A SUCCESSFUL BLUNDER: Asked to make an indoor portrait on a cloudy day in December when I was equipped with only a rapid rectilinear lens, I was somewhat dubious as to the possibility of a good result, feeling that an exposure of about ten seconds would be required. After posing the sitter near a window with a fair sized reflector, I drew the slide, pressed the bulb, and at the expiration of ten seconds, pressed it again to close the shutter. Coming to expose a second plate, I discovered that my shutter was set at one second, instead of ten, and the first exposure had therefore been a lonesome single second, instead of the ten joyous ones that I had intended. Later I thought I might as well develop the second exposure and see what would result, and was surprised to find that while it was by no means perfect through being somewhat thin, it was the best of the lot. I have since found that on a clear day by posing my subjects near a window in an ordinary well lighted room with a good sized reflector, so that there are no deep shadows on the face, I can, with my f-8 lens and one second shutter speed, make good pictures; and although the negatives are a trifle thin, they print well on normal Cyko. Good baby pictures can be made in this way by watching for a momentary pause in the activities of the youngster, as only last week I made four such exposures on one not yet two years old, and all of the four negatives were perfect as far as sharpness and freedom from motion were concerned.—V. W. H., New Hampshire.

Photographers Wanted in the Army and Air Service

Too late for attention in our December issue, we were advised by the Office of the Chief Signal Officer, Air Division of the War Department, that the army air service needs many more skilled workmen, including photographers, behind the lines abroad; these men to be recruited continuously, beginning immediately, until March thirty-first. Applicants must be physically sound, white and from eighteen to forty years of age. To enlist apply to the Volunteer Bureau, 119 D Street, N. E., Washington, D. C., for enlistment blank to be filled in and returned. If accepted you will receive a card to take to the nearest recruiting station, this card assuring your being enlisted, if physically fit, in the Aviation Section of the Signal Corps and assigned to the proper kind of work. You will be enlisted as a private and will remain as such until assigned to your proper place in a squadron after several weeks of military training and special instruction in the work required. Squadrons are being formed continuously, and as soon as qualified you will be assigned and given rank according to ability. The advantages of enlistment are well set forth in the circular that you will receive by addressing as above, and we trust that no small number of our readers will at least inform themselves upon the subject, as the opportunity presented is really an inviting one, particularly to those who can appreciate the chance to take part in the blood-stirring events that service in their country's behalf makes possible.

For every art is a language, and to secure power and beauty and adequacy of expression a man must command all the secrets and resources of the form of speech which he has chosen.—Hamilton Wright Mabie.

CAMERA CRAFT

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For Our Country

Men have enlisted and are enlisting, have been and are being drafted into our army and navy. Loyal citizens hold varying opinions concerning war; but, we are in the war, and there can be only one loyal opinion as to who should win. Americans cannot remain Americans and hope for anything but our unqualified victory. Sentiment inspires the wish and reason for the determination.

We are told that our contention is for democracy, and doubtlessly that would be a part of what victory for us would mean; but, would it be any less near the truth to say that we are fighting to keep from having to pay the cost of a war in the origin of which we had neither a provocative nor an interested place? To have the inconceivable cost put upon us would mean the enslavement of our posterity. Even the unequaled wealth of the land in vegetable and mineral, nor the output of its citizens for generations, could meet the interest on an indemnity put upon us by a victor without the standards of our living being reduced to that of coolies. And our children, and the children of our children, for generations, should have to bend under the burden till our racial upstandingness must pass and we become downtrodden and servile.

But this is not a discussion of the right or wrong of our being in the war. You may not approve of your son's going into the wilds to hunt big game; but, finding him determined to do so, would you let him go unprepared? Would you have him lacking in the least essential which might assure his safety? Certainly not. Our men are at the front and more are going every day. While men are giving of their income and substance, women are sewing and knitting, too many are mouthing patriotism and letting the emotion evaporate in talk, the signing of pledges, the hanging of banners, and in meretricious patriotism that does not necessitate love of country or even lack of greed. This is a time for men to keep their mouths shut, their lips set, and the jaws firm. It is the time to act. Do your bit. Do not take it out in expression by word of mouth, but do, do, do.

Just now the government needs photographic lenses of certain focal lengths and particular makes. It offers to buy them; and, to give you what uplift your soul may require to prod you to a good deed, calls it: "Enlisting your Lens". The government might impress your lens and be letting you off easy at that, but it asks you to enlist it, and pays you for it. You have your cake, may eat it, and still have it. There are many American lenses that will serve the purpose of your daily needs as well, and some are being bought to supplant the anastigmats wanted. But the army needs a standardized equipment, it needs certain lenses. If you have one of these, come through.

Do this quiet, unadvertising thing for America, the country of your birth,

or of your choice. You have been nurtured here. It is no lethal weapon, no ammunition you are asked to help supply, but defensive apparatus. Give the boys at the front a supporting chance, too, with what they need and plenty of it. Provide the soldiery at home with whatever they need to keep danger from your own house and home. It is only a bit of glass, in this case. A disk of glass to see a menace while still afar and meet and conquer it before it reaches your dear ones. You might gladly donate your lens for this purpose, but you needn't. Sell it to the government. In a year we shall be making our own. We need yours now.

Our Workers at The London Salon

In our editorial under the above heading last month, we explained that accurate data was not at the moment available, and this, we trust, will absolve us from blame in failing to mention all of the local workers and in giving Mr. Schulte's name a wrong final letter. The usual catalogue failed to reach us and our mention of the success of California workers was based upon the comment appearing in the British magazines, the names mentioned in such of those brief early reports as reached our eyes being those quoted by us last month. Messrs. Banfield, Goetz, Neymann and others of this city; Messrs. Fleckenstein, Archer and their co-workers of Los Angeles, not to mention numerous others throughout the State, were not intentionally overlooked, nor did we assume to distinguish those mentioned as against those whose names were not given. We simply did the best possible with the fragmentary information available at the moment.

The Pittsburgh Salon

Pictorial workers throughout the country do not need to be told as to the important position that the Annual Pittsburgh Salon holds among our exhibitions, and those who have been fortunate enough to find themselves included in the ranks of exhibitors are loud in their praise of the consideration shown both themselves and their work, a form of appreciation that is always welcome, yet not always forthcoming from the management of some few of our exhibitions. The Fifth Annual Pittsburgh Salon of Pictorial Photography will be held March fourth to thirty-first, 1918, inclusive, as heretofore, in the spacious galleries of the Carnegie Institute, the last day of entry being Monday, February eleventh. Prints submitted will all be passed upon by a committee of selection that will be thoroughly competent and entirely impartial; and only work possessing high artistic merit, both as to subject matter and execution will be hung. Entry blanks may be obtained from C. E. Beeson, Secretary, 700 Union Arcade, Pittsburgh, Pennsylvania. Local workers can secure blanks by calling at our office if they so desire.

If religion did not exist I should have had to invent it. True artists are the most religious of men. Their eyes plunge beneath the surface to the meaning of things. When afterward they reproduce the form they endow it with the spiritual meaning which it covers.—Rodin.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D., Burlingame, California

Sepia Tones By Direct Development

The observations recorded in the following paper (communication No. 53, by Adolph Nietz and Kenneth Huse of the Research Laboratory of the Eastman Kodak Company), were made in order to find the best conditions for producing sepia tones by the use of a restrained developer for a fully exposed print. It is well known that slow developing-out papers, such as Velox or Artura will give warm tones if over-exposed and developed with a strongly restrained developer, and some years ago instructions were given for obtaining warm tones on Velox paper by this method.

The process, however, has not got into favor in consequence of the uncertainties attending its use, and we do not expect that the production of sepia prints by this method is very likely to be generally adopted. At the same time the results obtained in our work were very interesting, and with some subjects very excellent prints can be obtained. Great care in manipulation is necessary, as there is little margin for error, so that the working of the process is not by any means easy.

In an attempt to standardize the conditions under which the best tones could be obtained, we found that the tone depended only upon the time of development, and that with a fixed time of development a good reproduction of tone could be secured, the exposure being adjusted to get the necessary depth of print. We have also found that developing agents vary very much in their suitability for use with restrainers, and have found that only one or two developers give really first-class results, and that one of these in particular is especially suitable for obtaining good sepia tones free from smokiness in the shadows, which was the disadvantage of earlier methods of obtaining warm-tone prints by restrained development.

This process about to be described is particularly suitable for obtaining true sepias, a true sepia being defined for this purpose as corresponding to the sepia water color manufactured by Winsor & Newton. Since, in development, the prints starts as a red-brown and passes through brown, sepia-olive, sepias and olives, any of these tones can be obtained under conditions which will be stated later.

Artura chloride is the only paper with which we have obtained really satisfactory results, and it is to be understood that all subsequent statements imply the use of this printing material.

The most satisfactory developing agent was found to be chlorhydroquinone. A great number of other developing agents were tried, including hydroquinone, and Elou, and other substituted hydroquinones, but chlorhydroquinone has the necessary properties for use as a restrained developer; it is sensitive to restraining agents, it works cleanly and is stable, and we have therefore adopted it for obtaining these sepia tones.

After numerous experiments, the best working formula was found to be:

Chlorhydroquinone	5 grams
Sodium sulphite	30 grams
Sodium carbonate	16 grams
Potassium bromide	6 grams
Potassium metabisulphite	6 grams
Water to	1000 c. c.

With this as a basis, a systematic study of the effects of each constituent was carried out.

Alterations in the amount of developing agent gained no advantage.

Changes in the concentration of this substance had practically no effect on the resultant tone.

As the developer is inert in the absence of alkali, a certain amount is necessary to obtain a solution, which will work at all rapidly with such large concentrations of bromide and metabisulphite as are necessarily present. The following considerations will show the important part taken by alkali in

this process. The color of the resultant print depends solely on the size of the silver grains in this case, and not on the formation of any colored oxidation product. As development progresses, these grains grow in size, and hence the effective color changes successively through a range from red to greenish brown and to black. Therefore, at any particular stage, the color must be due to a combination of these various grain sizes, since some of the grains start developing at a later time than others. Thus, a proper mixture of greenish black with red produces the desired sepia. This balance of grain sizes, depending on the speed with which development proceeds, is necessarily dependent upon the concentration of alkali used. It was found that the concentration given in the formula was a critical one, as a less amount rendered the developer entirely too sluggish, while more hastened development so materially that the tone was destroyed. Potassium carbonate was substituted, but was not found as satisfactory. This may be due to the fact that in equivalent quantities it is somewhat more alkaline than sodium carbonate. It is also doubtful whether the resultant color was as good.

Potassium bromide may be considered one of the most important constituents. After trials of a wide range of concentrations of bromide, about the amount indicated in the formula was found necessary and sufficient to aid in producing the proper tone. An excess needlessly lengthened the exposure and the time of development required. As the proper size of grain can be produced only in restrained development, a low concentration of potassium bromide is obviously detrimental to the tone.

So far we have given no reason for the use of this substance, which usually does not appear in formulæ for paper developers. It was in attempts to increase the keeping power of the developer that this substance was first used. In relatively large quantities it was found to exert considerable restraining action and to influence the color to a great extent. It is probable that the action of metabisulphite is not exactly similar to the restraining tendencies of bromide. This is borne out by the fact that satisfactory sepias cannot be obtained without this compound, although reds and yellows, such as those characteristic of ordinary restrained development, are easily produced by the use of bromide alone. The greatest factor in the production of correct tone apparently is a delicate balance between the concentrations of bromide and metabisulphite, which seem to be interdependent and capable of producing certain tones not obtainable by other methods. The amounts given in the formula are about correct; more metabisulphite renders the tone too red, whereas less gives greenish black tones.

Aside from the changes thus far described, numerous experiments were made altering two or three constituents at the same time, or omitting any one, or two. In this manner more than one hundred developing formulæ were tested, but not one of them showed any improvement over that already given.

The considerations on the need of development and its relation to color, brought out in the paragraph relating to sodium carbonate, are applicable here. Accordingly, if the developer is diluted, the speed of development is decreased and the size of grain diminished, with a tendency towards more color in the print. Naturally, if dilution is not great, practically the same results may be obtained by longer development as with the more concentrated solution. However, nothing is gained by changing the concentration of the developer, since the time of development with the formula stated is conveniently short, but sufficient to permit of control.

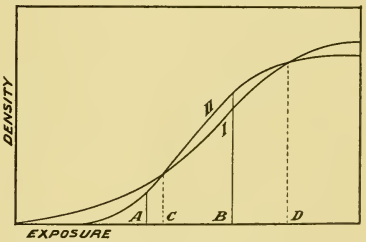
That the tone is dependent only on the time of development is indicated by the fact that the print changes continuously in color from the beginning, passing through the stages yellow, yellow-brown, red-brown, sepia to greenish-black. Hence it is evident that, to obtain any warm tone, it is absolutely necessary to stop development at a definite time. But the time of development having once been determined, any number of prints may be developed to the same tone. The actual time ranges usually from one to two minutes, which is no more than that necessary for ordinary development. This step of the process requires some experience and skill. It is impossible to judge by the depth of the print at what point development should be stopped. The print fades considerably and also changes color in the fixing bath, again changing color and depth on drying. It is therefore imperative to develop equally exposed prints for different lengths

of time, thereby securing different tones, and to complete the operations of fixation and drying before final selection is made. The proper developing time is then chosen, and all succeeding prints must be developed for that time. However, these statements apply only to a limited extent; it will be shown later that the tone obtainable varies somewhat with the character of the subject and the contrast of the negative. Other conditions to be carefully observed will also be considered. Nevertheless, under any given set of conditions, a definite tone is obtained by maintaining a constant time of development.

At first glance it may appear that the length of exposure required is excessive, since this is of the order of seventy-five to one hundred times normal. As Artura Chloride is itself a slow paper, with ordinary light-sources, the time of exposure becomes so long as to be impracticable, but arc lamp, mercury vapor, or the nitrogen tungsten light, reduces this exposure to fractions of a minute. An indication of approximately correct exposure is a slight printing-out of the image. The character of the negative may somewhat affect the amount to which the image should be printed out, but this criterion will be satisfactory for preliminary trials. The correct way, however, is to determine the exposure by the depth of the finished print, that is, one which has been developed to the tone desired, fixed and dried. Contrary to the procedure of ordinary printing methods, the exposure here must be exactly correct, since it is impossible to compensate by altering the development time. As experience is gained, it is possible to judge exposure and development at different stages of the process, as in the developer or in the fixing bath. In proper hands this process has decided possibilities, and the operations involved are no more difficult than those encountered in various other printing processes. However, departure from the fixed conditions we have attempted to set forth will probably lead to failure.

Before considering the type of negative best suited for this process, it may be advisable to include a few well-known facts concerning reproduction in general. It should be understood first of all that any negative material is limited in its ability to reproduce a given scale of tones in the subject. This is commonly referred to as the latitude of the plate, or film. In going one step farther, from the negative to the print, another limitation is placed upon us, inasmuch as the scale of the paper is insufficient for rendering correctly the entire range of every negative. This is naturally the reason for the different types of paper on the market. Now, the more closely the scale of the paper approaches the scale of the negative, the better the reproduction. As the contrast of the paper is increased, the available scale is diminished, and thereby the range of tones in the subject is distorted. Hence, for a "contrasty" type of paper a soft negative is always used, and vice versa.

In this process, the developer necessarily tends effectively to increase the contrast of the paper used. This is shown graphically by the figure, where Curve 1 represents the normal development of Artura Chloride. Curve 2 shows the effect of developing an over-exposed print on the same paper under the conditions required for obtaining a good sepia. In the diagram the two curves are plotted side by side, although the exposure



in the second case was about seventy-five times that for the first. The latitude of the paper in each case may be measured by the projection of the approximately straight line portions of the curves on to the horizontal axis. Thus the distance between A and B represents the approximate latitude for Curve 2, and similarly that between C and D for Curve 1. It will then readily be seen that the sepia print can render only a little over half of the range of tones reproduced by the black and white. Consequently, we must deal with it as if it were another type of paper.

In view of the preceding statements, it is apparent that the range of negatives suited to the use of the direct-development process

is more limited than that for ordinary reproduction. But, just as any photographer usually develops his negatives to suit the particular kind of paper he uses, so in this case, by altering the time of development, he may adopt his negatives to conditions here met with. Such distinctive and pleasing tones are possible for at least some classes of negatives so that it may be of interest to certain careful workers to give the method a trial. With soft portrait negatives of a certain quality, excellent work may be done, using tones such as olive sepia or decided olive. It is practically impossible to describe the kind of negative with which a reasonable degree of success is insured, but a little experimenting should indicate once and for all the exact type necessary. Another line of work to which this process is peculiarly adapted is the reproduction of paintings and etchings. Here a rich etching sepia is readily obtained.

In conclusion, we will state in a more concise and explicit way the method of using the process, along with such added information as may be necessary.

The solutions required are as follows:

Developer:

Chlorhydroquinone	5 grams
Sodium sulphite	30 grams
Sodium carbonate	16 grams
Potassium bromide	6 grams
Potassium metabisulphite	6 grams
Water to .....1000 c. c.	

Acid short-stop: 2 per cent acetic acid solution.

Fixing bath: Plain hypo or bath containing Velox Liquid Hardener. Bisulphite or metabisulphite baths must not be used, as they are detrimental to the tone.

A sheet of Artura Chloride paper should be exposed under a typical negative to electric arc, mercury vapor, or nitrogen tungsten lamp. The exposure required will be about seventy-five to one hundred times normal, and the image should be faintly visible. The paper should then be cut into several strips and each developed for different lengths of time.

The time of development must be accurately controlled to within five seconds, and to assist in this the acid short-stop should be used. The prints should be rinsed before placing in the fixing bath. Develop the first strip one minute, and remove the others at intervals of from ten to fifteen seconds, noting the exact time for each print. Fix ten minutes, wash and dry.

This will give a series of prints in different tones which should range from red to olive. If such is not the case, extend the range of development times. At this stage the exposure is of less consequence than the time of development necessary to produce the tone desired. From the quality and depth of the print it will be evident whether exposure has been correct or not. A few trials will determine the proper adjustment. Having now determined the approximate exposure required and the manner in which the tone changes with development time, it will be relatively simple to fix the exact time necessary to produce any given tone. If the tones vary widely, repeat the trials, using intermediate times of development, as the latter may be a question of only a few seconds' difference. It will be observed that development proceeds very slowly at first, but speeds up considerably as it continues. The print will be much darker in the developer than when fixed and dried, as fading takes place in the fixing bath, and the color will be much different from that of the dried print. Hence make no judgment of tone until the print is perfectly dry. It should now be possible to select the proper time of development and then to adjust the exposure to give the desired quality, after the manner similar to that used in ordinary printing. It is difficult to give more explicit instructions than these, but if they are intelligently followed, experience will be rapidly gained, and the operator should then be able to obtain satisfactory results.

We have up to this point not advised the judgment of tone until after the print was dried. After a number of observations on the change of color in the developer, however, it will be quite possible to determine the stage at which development should be stopped. A marked purple veiling appears at about the proper development time. By now carefully watching the print (which may be done by rather strong yellow or weak tungsten light, because of the very heavy exposure already given) and correlating the colors of the prints on removal from the developer with those of the same prints fixed, washed, and dried, the skilled worker will readily acquire the proper criterion at an intermediate stage of the process. In a similar way the appearance of

the print in the fixing bath may afford a method of judgment of tone. But for the first trials of the process development by time alone is recommended.

The limitations of the process, as we have tried to point them out, should be kept in mind. As the question of tone is simply one of individual taste, it may be found that with some negatives it is impossible to secure tones pleasing to the operator. If such is the case, some other type of negative should be used, remembering the remarks under considerations on the kind of negative suited to the process.

Some negatives will tend to produce so-called double toning, that is, the high-lights are likely to appear pink. No remedy for this can be found, but it may not always be objectionable.

Finally, there are several conditions to be observed in order to secure reproducibility of color from print to print. The temperature of the developer must be kept constant if the same time of development is to be used. As with every photographic process, pure chemicals should be employed, and the solution should not be kept too long before using. The prints should be developed in a liberal quantity of the solution. Although quite a number of prints may be developed in this amount, it should not be overdone, because the tone is so dependent on the time of development.

As has already been stated, the tone is not due to an oxidation product, but simply to the state of division of the silver. Prints made by the method just described are probably as permanent as those of any other toning process, as shown by very severe tests made by exposure to sunlight for a period of six months. No difference could be observed between the shielded and exposed portions of the print.

The Swing Back and the Telephoto

The worker who commences the use of the telephoto lens on architectural subjects will find that he must unlearn his rules about the use of his swing-back or swing-front. Under ordinary circumstances we have found the quickest way of focusing many architectural subjects, when using ordinary lenses, to be the adjustment of camera and swings until the vertical lines fall into line with pencil lines ruled on the groundglass. This method cannot be used with those subjects in which the parts originally vertical have been pushed out of the vertical by subsidences and the weight of vaulted roofs unless, indeed, the aim is to show the building, or portion of the building, as originally constructed—a method of procedure advocated in certain cases by a well-known architectural photographer. If the aim is purely architectural, this course may be quite satisfactory. If pictorial, however, we are inclined to think that it is better not to restore verticality in the photograph, remembering that Ruskin wrote: "A ruined building is a noble subject, just as far as man's work has therein been subdued by Nature's." In such cases we adjust the back of the camera to a vertical position by the use of levels. But when using telephoto lenses this method is not feasible, as its adoption would produce very marked divergent distortion if the lens were pointing upwards. In fact, very considerable tipping up of the lens may be done without any distortion being apparent, the plate being kept at right angles to the axis of the lens. In such a case the adjustment of verticals to lines ruled on the groundglass becomes the only practical method. As in many cases the telephoto lens is used for detail work, such as a figure in its niche, the artistic point to which we have referred, scarcely applies; in fact, an isolated detail would look curious if slightly inclined in its picture space. The weathering of the stone, if an outside figure, will, however, supply the touch of Nature's subjugation.—*British Journal of Photography.*

Sepia-Toned Bromides

David Ireland, writing in *The Amateur Photographer* says: With remarkable unanimity the manufacturers of bromide paper continue to prescribe sodium sulphide as the agent to be employed for producing prints of sepia tone. The reason is difficult to find, the compound in question being one of the most unstable ever called into the service of the photographic art. Sodium sulphide is strongly deliquescent, and after assuming the liquid condition is prone to decomposition, one of the products being sodium hyposulphite, and its use in this state results in the ruin of any bromide print to which it may be applied.

The writer has long discarded sodium sulphide in favor of ammonium sulphide, which possesses the advantage of being immune

from liability to dangerous decomposition, and is at present only one-eighth the price of the sodium compound. These two darkening agents, however, have one defect in common—that of exercising a softening influence on the gelatine surface of bromide paper, which is apt to lead to abrasions and, in hot weather, to blisters.

Once becoming known, it appears probable that both these reagents will be replaced by barium sulphide, which produces a rather finer, slightly cooler sepia tone than either of the foregoing, and softens the surface of the print not at all, a property which should commend barium sulphide to those resident in warm climates. Another point in its favor is that it is entirely without odor, an advantage which will be welcomed by the more fastidious.

A dram or so is shaken up in about ten ounces of warm water, the insoluble portion allowed to settle, the clear solution poured off from the residue and employed after the prints have been bleached and washed in the usual manner.

Toning Bromide Prints

One's mind should be made up beforehand as to whether a bromide print is to be sepia-toned or not; and if it is, a somewhat greater depth should be aimed at than in the case of one which is to retain its normal color. This is best effected by giving a full but not a generous exposure and using a fairly strong developer. The drawback which has hitherto attended the sepia-toning process has been the yellowish tinge assumed by the high-lights, robbing the print, as it does, of the sparkle which existed in its black and white condition; and a method of toning which will retain and, if need be, enhance the brilliancy of the picture should be welcome to all who employ bromide paper as a printing medium.

The bleaching bath for prints which are of the correct density is as follows:

Water .....10 ounces
Potassium ferricyanide .. 20 grains
Sodium chloride .....200 grains

Sodium chloride as purveyed for the culinary department is of quite sufficient purity for the purpose. The print, being bleached in this solution, is washed for a couple of minutes and darkened with barium sulphide or ammonium sulphide; sodium sulphide, owing to its instability, should be banished from the photographic chemical cupboard.

In the process of bleaching the potassium ferricyanide attacks the metallic silver of the print, which is then converted into silver chloride. This is very slightly soluble in a solution of sodium chloride, which is present in this bath in sufficient quantity to act as a clearer of the high-lights, and hence we have a brilliancy which cannot be obtained by the use of the potassium ferricyanide and potassium bromide formula so universally prescribed. When it is required to reduce the general density the quantity of salt is increased from two hundred to six hundred and sixty grains, and the bath used at a temperature of sixty to sixty-five degrees Fahrenheit.

It is sometimes desirable to tone a bromide print to a rich sepia, but the original is gray in tone, due to insufficient development. The ordinary sulphide toning bath in this case is apt to produce not only a bad color but to make the result look even weaker than before. A good plan under these circumstances is to adopt the method suggested some years ago by H. W. Bennett, in which the bleacher contains mercury as one of the constituents. The resulting tones range from a rich engraving-black to warm brown. The following solutions are necessary:

A: Potassium ferricyanide, 1 ounce
Potassium bromide .....1½ ounces
Water ..... 9 ounces

B: Bichloride of mercury... ¼ ounce
Potassium bromide ..... ¼ ounce
Water ..... 9 ounces

For securing rich black tones, make up the bleaching solution with one hundred and sixty minims of A, ten drams B, four ounces of water. With this quantity of mercury solution the print is considerably intensified in the toning process. For cool brown tones, use one hundred and sixty minims A, eighty minims B, four ounces water.

And, do not commence the development of bromide enlargements with a full-strength solution; the process is under much better control and the results are of greatly improved quality if the operation is begun with a solution diluted to one grain amidol per ounce, this being reinforced from time to time as development proceeds by small additions of the stock solution until the required density has been attained.—D. I. in *Amateur Photographer.*

Copying Half-Tone Illustrations

A little known method of eliminating the structure of the original half-tone illustration is to use a sheet of groundglass of the finest description. It must be placed in contact with the sensitive plate with the ground side towards the lens of the camera when the plate is in position to make the exposure, and allowance must be made, when focusing, for the thickness of the groundglass in front of the sensitive plate. A simple manner of accomplishing this is to rack the camera out a fraction of an inch after sharply focusing the original to be copied, to make allowance for the difference in focus; or a more accurate method is to substitute a sheet of groundglass (the exact thickness of the groundglass in contact with the sensitive plate) in the focusing screen with the ground surface outwards or away from the lens of the camera. By this method no trace of dots should be discovered when copying, say, coarse newspaper illustrations. When copying finer illustrations, the groundglass in front of the plate should be used the other way round, using very thin cardboard, or even paper when necessary to keep the groundglass side from being absolutely in contact with the plate. For copying finer newspaper illustrations, sheets of brown paper of various thicknesses should be cut the exact size of the plate, with a suitable opening (similar to a lantern-slide mask) for interposing between the sensitive surface of the plate and the ground-side surface.—W. N. L. D., in *Amateur Photographer.*

Qualitative Tests for the More Common Developers

Speaking broadly, one may say that all the photographic developers are intermediate products for the manufacture of dyestuffs, or else easily prepared derivatives of these intermediate products. Consequently, when the Allies turned to the manufacture of their own dyestuffs, it was but natural that some attention should be given to the manufacture of developers. The older developers, pyrogallic acid and hydroquinone, although no longer of German origin, have retained their former names, as have also para-amidophenol and its solution, Rodinal, but there appears to be a strong feeling against the perpetuation of the German-made names, metol and amidol.

Hence we are met in the advertisement columns of the photographic journals by a number of new developer names, some of them new names for previously known substances, some of them, such as Monomet, announcing the appearance of an entirely new body.

The photographer who likes to know exactly what he is using in the way of developer will naturally wish to examine into the nature of the bodies thus presented to his notice, and he will meet with some difficulty in satisfying his legitimate curiosity, owing to the very scanty literature on the subject.

The following notes may make his researches a little easier for the future.

Practically the only developers on the market at present are:

Pyrogallic acid.

Hydroquinone.

p-Amidophenol. (Rodinal and similar solutions.)

Monomet.

Amidol (diamidophenol).

Metol (methyl-para-amido-phenol).

The reagents required are: Ten per cent solution of sodimum sulphite, sodium carbonate, sodium hydroxide, sulphuric acid; thirty per cent solution of sodium nitrite; one per cent solutions of ferric chloride and of bichromate of soda or potash; and ninety-five per cent alcohol. (Methylated spirit will do.)

Test No. 1: Shake up a small quantity of the dry developer in a test-tube with a little alcohol.

Pyro and hydroquinone are freely soluble. The other four slightly or not at all soluble.

Test No. 2: Make an approximately one per cent solution of the developer, and add sodium sulphite solution.

Monomet and amidophenol hydrochloride give a white precipitate at once; soluble in caustic soda.

Metol and amidol will give crystalline precipitates, slowly forming from ten per cent solutions, but not from one per cent solutions. Pyro and hydroquinone are not precipitated.

Test No. 3: To a one per cent solution of the substance, add sodium carbonate solution.

Monomet and amidophenol are precipitated as in test No. 2, but the liquid grad-

ually turns brown. Metol is not precipitated, but the solution turns brown; the precipitates are soluble in caustic soda.

Amidol gives a bright blue solution, which turns green on dilution.

Test No. 4: Make a strong solution of the substance in the dilute sulphuric acid, cool well, and add a few drops of the sodium nitrite solution.

Metol gives a yellowish crystalline precipitate, either at once if the solution is very strong, or after a few moments if more dilute.

None of the other developers give a precipitate.

Test No. 5: To a one per cent solution of the substance add a few drops of the ferric chloride solution.

Hydroquinone gives a yellowish precipitate which may turn dark green (quinhydrone) if the solutions are too strong.

Pyro gives a brown color.

Amidophenol gives a chocolate-brown precipitate.

Monomet gives a brown solution, turning purple.

Metol gives a bright claret color.

Amidol gives a bright claret color.

Test No. 6: To a one per cent solution of the substance add a few drops of the ferric chloride solution.

Hydroquinone.—No change.

Pyro.—Brown, turbid.

Amidophenol.—Bluish purple.

Monomet.—Brown, turning purple.

Metol.—Reddish brown.

Amidol.—Brown, turning purple.

When we have to deal with a single developer, the above test will be found quite reliable. But when we come to examine a mixture, such as metol-hydroquinone, pyro-monomet, etc., difficulties begin to appear.

Usually, however, the two ingredients may be separated by shaking up the finely powdered substance with two or three small portions of alcohol, filtering or decanting the alcoholic extract, and allowing it to evaporate completely before making the tests on the soluble and insoluble portions respectively.

Liquid developers fall into two classes. We have mixtures such as M-Q, and solutions after the nature of rodinal, which is amidophenol hydrochloride dissolved in a strong solution of sodium sulphite and hydroxide. Perhaps the simplest method of attacking this problem is to add dilute hydrochloric acid drop by drop until effervescence ceases.

A developer of the M-Q class remains clear; if the liquid contains amidophenol, a white precipitate will form as soon as acid is added, which will redissolve when the acid is in excess.

The acidified liquid is now evaporated to dryness on a water bath, or a soup plate on a pan of briskly boiling water. When the smell of hydrochloric acid has disappeared, the white crystalline residue is submitted to the tests given above.

From the mode of its production, metol is always apt to contain more or less amidophenol. If this is not present in large amount, tests Nos. 2 and 3 may not indicate the contamination, whilst the positive test, No. 4, for methyl para-amidophenol is not interfered with. The most certain indication of the presence of amidophenol is obtained as follows: The suspected sample is dissolved in water, and is mixed with a strong solution of sodium acetate. One drop of benzaldehyde is next added, and the mixture gently shaken. The presence of amidophenol is indicated by the formation of a curdy white precipitate. By suitably regulating the conditions of the experiment, this test may be made strictly quantitative.—W. Ermen in *British Journal of Photography.*

"Sketch Portraiture"

This is the title of an excellent little book by J. Spencer Adamson, an expert in this line of work and one who has the happy faculty of imparting the knowledge which he possesses, to others through the medium of the printed page. We can hardly imagine any point connected with the work that has been overlooked in the text and several illustrations add greatly to the clearness of the instructions given. The style of work known as "Sketch Portraiture" is gaining in popularity, and the demand for information as to its production is fully met by this excellent little book. It is published by Henry Greenwood & Company, Limited, 24 Wellington Street, London, W. C. 2, England, and will be sent postpaid to this country upon receipt of four of the five cent International Coupcons that can be purchased at any postoffice.

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Tentative Development

A reader down in New Mexico wants to know what tentative development is and what its advantages are. Tentative development has practically been abandoned. It was based on the supposition that by watching the behavior of the image as it started to make its appearance, one could, by modifying the developer, favor either under or over-exposure in a way to improve the results. The reason this did not work out in practice may perhaps best be explained by first calling attention to the fact that the emulsion being developed has much the character of a sponge, and then having the following simple experiment made: Immerse a small, fine grained sponge in a vessel containing water that has been colored decidedly red with some simple dye; allow it to remain a few minutes and then pour off this solution and substitute another of a different color. The sponge will retain its red contents more or less completely for a surprisingly long time. That is just what happens when we pour off the original developer, modify it, and return it to the plate; the emulsion remains still subject to the original solution and our trouble has been for little or no purpose. If a plate or film is known to be over or under-timed before the developer is applied, modifying the developer, particularly in the case of the former, will sometimes prove effective. Most developing formulas are made rather strong in alkali in order to get all possible out of the emulsion, and for that reason reducing the amount will generally produce better results in the case of over-exposure. In other words, if one will make up a formula with about three-fifths or one-half of the alkali called for he will find that he must increase his exposures in order to fit the developer so compounded. We know of one good worker who makes it a practice to proceed in this way, and he certainly does turn out negatives of exceptionally fine quality. His plan has the further advantage of allowing him to have recourse to the "normal" developer in the case of what is, to him, an under-exposure. He insists that the so-called normal developer is really nothing of the kind, for the reason that while it will permit of good results being secured by decreasing the alkali, it will not permit of more than a slight increase of that necessary constituent. His explantion of this is that the plate and film makers would not care to recommend his developer as a normal one, because their products, be they plates or films, if subjected to it, would have every indication of lacking in speed. While I am not quite ready to accept his logic, his results indicate that at least in his hands the method advised has decided merit.

The Hyperfocal Distance

An Ohio correspondent advises that the table, or that part of the tables in the "Anscoing America" booklet that the Ansco Company puts out, showing hyperfocal distances, does not correspond to the figures secured by applying the rule he has been given. He wants to know which is right. Both are right; only, his rule considers a degree of sharpness described as equal to a circle of confusion of one one-hundredth of an inch while the Ansco table considers a finer degree of sharpness, or one equal to a circle of confusion of one two-hundred and fiftieth of an inch. His rule says multiply together the focal length of the lens, multiply by one hundred and divide by the f value of the stop, dividing again by twelve to get the distance in feet. If he will use two hundred and fifty in place of the one hundred of his rule, as a multiplier, he will find that he gets exactly the same figures as those given in the Ansco booklet. One one-hundredth of an inch as a measure of the circle of confusion is sufficient for ordinary work, but for enlarging, the figure used by the Ansco table is more satisfactory. This understanding

of the method of determining the hyperfocal distance is of great value if one will but apply it. Suppose we have a six and one-half inch focus lens and find that the hyperfocal distance with stop f-16 is fifty-five feet. With a large stop and using a magnifier we focus sharply upon an object at that distance, marking the position of the camera front when so focused. We then know that with the front drawn out to that mark and the lens stopped down to f-16, everything between twenty-seven and one-half feet, or just half the hyperfocal distance, and infinity, is in focus. If we are satisfied with a lesser degree of sharpness, one equal to the circle of confusion of one one-hundredth of an inch, the hyperfocal distance becomes twenty-two feet and everything between eleven feet and infinity will be in focus, or in a focus equal to the degree of sharpness indicated, that is, using stop f-16. With stop f-8, two sizes larger, the hyperfocal distance will be just twice as far away and the nearest point in focus again one-half the hyperfocal distance or twice as far away as with stop f-16. It is easily understood from the above that if one be using a lens of fairly short focus, one such as is demanded by the hand camera, and he is satisfied to use a fairly small stop, he has but to figure out the hyperfocal distance for his lens, focus upon an object at that distance; and then, with the lens at that position his camera becomes a fixed-focus one.

Always Carry a Camera

It does not have to be pointed out, the average worker knows all about it, but the fact that one always runs across something he would like to photograph when he has no camera along never seems to suggest a simple means of preparing therefor. There are a number of small cameras that are absolutely no burden whatever to carry. Get one, load in a spool of film, and always carry it with you. Suppose one does not find use for it more than once a year, which is hardly possible even if the regular camera is carried whenever it is thought that pictures will be found, and the small camera will easily pay for the trouble of carrying it about. And on top of all that, the disappointment it will save one, the recurring thought that a good picture has been lost, really should justify the small expense if one values his piece of mind at anything like what it is really worth. The user of a post card camera is so busy explaining to everybody that a camera of that size is the only thing, he feels it would be sacrilege to be caught with a small camera in his clothes. The professional has much the same idea, particularly the portrait man. And so it is down the list until we come to the man who openly defends the small camera as the right and logical thing. The man who wants to use only one camera, and that the small one, is all right from his point of view, but there is no good reason why every photographer should not use one when he does not want to carry about a larger and more cumbersome instrument. The artist has his notebook, does not hesitate to use his cuffs in a pinch, so why should not the photographer provide himself with something of the same facility for recording things that may appeal to him as he goes about.

Securing Sunlight Effects

One of my recent visitors has made a discovery, if that is not putting it too strong, that interests him greatly just at present. It is nothing particularly new, although it is something that a good many workers do not quite realize. They try to secure pictures that will give an impression of strong sunlight such as they see and admire, but the pictures are not satisfactory, the results are failures, as far as portraying the sunlight effects are concerned. The discovery of my friend lies in the simple expedient of selecting such subjects as do not include any portion of the sky in the picture, depending upon the splashes or patches of sunlight on buildings, grass and the like, as the case may be, for the sunlight effect. And in this he is right. The white paper of our prints will portray, fairly well, such light, but when it comes to the sky on a sunshiny day, the white paper fails. This, not because the sky is whiter than the paper, but by reason of the fact that, while darker than the paper, it has a stronger effect upon the eye, because it is itself a source of light. Take one of your sunlight views and oil the print from the back, then view it by transmitted light and you will get something much more like the effect seen in nature, but the same print viewed in the ordinary way falls far short of suggesting sunlight brilliancy. Follow our friend's advice and make your sunlight pictures with the sky out of evidence.

THE CAMERAMAN'S PAGE

Edited by Hal G. Hall

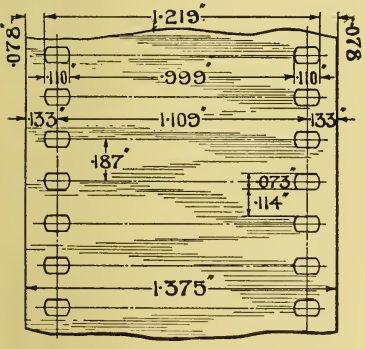
A Practical Department of Comment on Methods and Apparatus

The Bell & Howell Standard

Comment is sometimes occasioned by the fact that in a foot of motion picture film there are slightly more than sixty-four perforations, although each individual frame has four perforations, and there are generally considered to be exactly sixteen pictures to the foot of film.

As virtually all motion picture film made in this country is now perforated with practically absolute uniformity by Bell & Howell perforating machines, the reasons that led to the adoption of the particular measurements are of interest. We give these reasons with a diagram from the Bell & Howell Company.

"It is accepted as settled that the maximum shrinkage of motion picture film is .0937 inches per foot. Painstaking experiments



warranted the conclusion—fully established by our later experience—that a gauge length of 11.968 inches for 64 holes would insure the accuracy of perforation necessary to perfect results and at the same time make due allowance for the shrinkage of the film.

"The following computation shows why we adopt 11.968 inches instead of 12 inches as the standard for a perforation gauge measuring 64 holes. Assuming the outside diameter of the sprocket wheel in all standard projecting machines to be $^{15}/_{16}$ inches or .9375 inches, then: The diameter of the sprocket being .9375 inches, the circumference of the sprocket is 2.94525 inches.

"As standard motion picture film has an average thickness of .0065 inches the pitch diameter of the sprocket will be found to be .9375 inches plus .0065 inches or .944 inches. Pitch circumference is 3.1416 x .944 or 2.-965704 inches. Circular pitch equals 2.-965704 divided by 16 (the number of teeth on the sprocket) or .1853—plus inches.

"Our standard perforation gauge being 11.968 inches for 64 holes and the maximum allowance for shrinkage of film being $^{3}/_{32}$ inches or .0937 inches for 64 holes, therefore 11.968 inches less .0937 inches or 11.8743 inches is the average length of shrunken film measuring 64 holes. The pitch of the film or length per hole is 11.8743 inches divided by 64, or .18553 inches. Pitch of sprocket is .1853 plus inches. Pitch of film is .1855 plus inches.

"The drawing shows the measurements by which the gauge is established: Width of film overall 1.375 inches; width of film over all on perforations 1.219 inches; distance (width) center to center of perforations 1.109 inches; distance (width) inside to inside of perforations .999 inch; width of perforation .110 inch; distance (width) center of perforation to margin of film .133 inch; distance (width) outside of perforation to margin of film .078 inch; length of perforation .073 inch; distance (length) between perforations .114 inch; distance (length) center to center of perforations .187 inch."

The motion picture camera in use by the Signal Corps has no panoram or tilt cranks and yet can be steadily panoramed or tilted at any angle with the finder always in the horizontal position. This camera has a number of other strikingly original features that will be described in an early issue.

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NEW MEMBERS

4425—Jos. Boucher, 300 Creighton St., Ottowa, Ont., Canada.
2⅞x4⅞, various papers, of scenery, trees, natural curiosities, landscapes, clouds, etc.; for the same. Class 1.

4426—Earl A. Newhall, Bardwells Ferry, Mass. Class 2.

4427—George W. Fry, La Honda, Cal.
2¼x3¼ and 5x7, various papers, of California outdoors, redwoods and creeks scenes; for outdoor and animals. Post cards preferred. Class 1.

4428—J. B. Gale, Box 94, Lynden, Wash. Class 2.

4429—Lucille A. D. Hennigar, Box 575, Glendive, Mont. Class 2.

4430—Theodor Meyer, P. O. Box 194, Manila, Philippine Islands.
3¼x5½ up to 5x7, various papers, of Philippine views, natives of the Islands, native flowers, etc.; for only good home portraits, artistic landscapes and anything pictorial. Class 1.

4431—Wm. C. Settgas, 526 Flatbush Ave., Brooklyn, N. Y. Class 3.

4432—Hugh W. Allen, Box 14, San Angelo, Texas.
7x11, various papers, of home portraits and views; for the same. Class 1.

4433—John Y. Owsley, 19 Hillcrest, Salt Lake, Utah.
2¼x3¼, 3¼x5½ and enlargements, developing papers, of woodland, mountain, street and snow scenes, also views in Mormon Temple Square; for anything worth while. Class 1.

4434—John N. Warken, 1948 Larrabee St., Chicago, Ill.
3¼x4¼, various papers, of landscapes, and some animal and speed photographs; for poses, heads, antiques, landscapes, etc. Class 1.

RENEWALS

1465—R. G. Marsh, Box 126, Rotorua, New Zealand.
Any size up to 5x7, also lantern slides, various papers, of New Zealand scenery, Maori life studies; for lantern slides and post cards of figure studies, bathing girls, and general scenery. Class 1.

2009X—Dr. Chas. F. Meacham, Bellows Falls, Vt. Class 1.

2482—John W. Kimball, Windsor, Vt.
5x7, post cards and smaller, developing papers. Have a good assortment of views of New England scenery, like old wood roads, rivers, lakes, mountains and landscapes. Would like landscapes, pictorial work, also life studies. Will send good work and care only for the same. Class 1.

2645—Hugo H. Schroder, 303 E. State St., Bettendorf, Iowa.
2¼x3¼ to 5x7, post cards, lantern slides and enlargements, various papers, of birds, nests, wild flowers and miscellaneous subjects; for birds, nests, wild flowers, animals and nature studies. Good work only sent and accepted. Class 1.

3254—Vernon W. Hutchins, 39 Academy Sq., Laconia, N. H. Class 2.

3770—J. William Harmon, P. O. Clark's Box, Oklahoma, Okla. Class 2.

4174—Aug. Gaarz, 301 Arbor Vitae St., Cleburne, Texas.
5x7 and smaller, developing papers, of figure studies; for the same. Class 1.

4249—Roy A. Phillips, 1113 Turner Ave., Grand Rapids, Mich.
Any size up to 8x10, of woods and country scenes; for anything of interest. Stereoscopic views for the same. Class 1.

4269—W. A. Gillespie, P. O. Box 156, Stamps, Ariz.
3¼x5½ and smaller, various papers, of various subjects, park scenes, children, aeroplanes, auto races and good figure study copies; for 3¼x5½ mountain scenery, beach scenes, portrait and figure studies, on single weight paper. Class 1.

4291—John R. Palmer, 112 West Main St., St. Johnsville, N. Y.
Class 2.

4309—J. F. Ferguson, R. F. D. No. 3, Box 62, Buda, Texas.
Developing paper of types, figure studies, bathing girls and the like; for the same. Class 1.

4339—Hayden B. Brubaker, 916 Hill Ave., Wyomissing, Pa.
2¼x3¼, 3¼x5½ and 5x7, developing papers, of views of trips and home life; for anything of general interest. Class 1.

4343—S. H. Shelstad, Brandt, So. Dak.
3¼x5½ and 4x5, developing papers, of views, groups and general subjects; for sceneries, etc., Class 1.

4399—Benj. H. Graham, 2338 Christian St., Philadelphia, Pa.
Stereoscopic views of marines, nude studies and country views; for the same. Class 1.

CHANGES OF ADDRESS

2288—George A. Price, Box 286, Champaign, Ill.
(Was Centralia, Ill.)

3164—James Dickey, R. F. D. No. 2, Caneadea, N. Y.
(Was Black Creek, N. Y.)

4090—John W. Cook, Kingsburg, Cal.
(Was Los Angeles, Cal.)

4204—Claude Vedder, Banning, Cal.
(Was Paris, Idaho.)

4333—Juventino Ocampo, care of Cia. de Santa Gertrudis, S. A., Apartado No. 1, Pachuca, Hgo., Mexico.
(Was Apartado 167.)

4334—Matthew Green, care Box 302, Mound Bayou, Miss.
(Was Lake Carrier, Miss.)

4340—Leo Dillingham, Hq. Northeastern Dept., Boston, Mass.
(Was Manila, Ph. Is.)

4347—Helen Mittan, General Delivery, Cedar Rapids, Iowa.
(Was Central City, Iowa.)

4377—E. W. Fuller, 1321 Grove St., Berkeley, Cal.
(Was 1710 Parker St.)

4403—Duane D. Phalen, 140 Cook St., San Francisco, Cal.)
(Was Butte, Mont.)

CLUB NEWS AND NOTES

Club Secretaries and others will oblige by sending us reports for this Department

Wanamaker's Thirteenth Annual Exhibition

The Thirteenth Annual Exhibition of Photographs at the John Wanamaker Store, Philadelphia, will be held March fourth to sixteenth, inclusive, entry closing date being February ninth, 1918. Only meritorious pictures will be hung and those accepted will be passed upon by a competent jury, thus assuring the usual satisfactory results that have characterized these exhibitions in the past. Eighteen prizes will be awarded, ranging from one hundred down to five dollars, there being ten of these last. The picture must be original with the exhibitor, not a copy; only one of the first three prizes will be given any one exhibitor; pictures winning prizes will become the property of the John Wanamaker Store; pictures must be unframed, mounted on white or light toned cards, and not smaller than 8x10 or larger than 18x22; each to carry on the back the title with name and address of exhibitor, material used and other facts of interest; and, must be sent, charges paid, to Photographic Exhibition Bureau, John Wanamaker's, Philadelphia, Pennsylvania, and further information can be obtained from the same source.

The Annual Pittsburgh Salon

The Fifth Annual Pittsburgh Salon of Pictorial Photography will be held in the Department of Fine Arts of the Carnegie Institute, Pittsburgh, Pennsylvania, March fourth to thirty-first, 1918, inclusive. All prints submitted will be passed upon by an impartial and thoroughly competent committee of selection. Prints possessing the highest merits in artistic expression and execution will be hung.

The Pittsburgh Salon is distinctive in its annual exhibitions, being held in the spacious galleries of the Carnegie Institute, which surpass any other galleries. Entry blanks, containing full information and conditions of the Salon may be obtained by addressing C. E. Beeson, Secretary, 700 Union Arcade, Pittsburgh, Pennsylvania. Last day of entry, Monday, February eleventh, 1918.

OUR BOOK SHELVES

"Annuario 1917-1918 Della Fotografia"

Our Italian reading subscribers will find a wealth of photographic information condensed between the covers of this remarkable well edited compilation of tables, formulas and instructive matter pertaining to photography, much of which is not generally available. There are about three hundred and fifty pages of text matter with several pages ruled for exposure records and a few devoted to advertisements. Copies can be secured by remitting seventy-five cents to cover the price, three lira, and postage, to: "Il Corriere Fotografico", Viale Magenta N. 12, Milan, Italy.

"American Annual of Photography, 1918"

As heretofore, this annual comes to us brimful of instructive and inspiring articles and pictures; seeming to be, if possible, even better than its predecessors. Of the illustrations, many are full-page reproductions in sepia ink on buff stock and all of them, together with the text, are handsomely printed. Mail restrictions, it is explained, prevented the receipt of the usual European contributions, making this most truly an "American" annual. The price, in paper covers, is one dollar and twenty-five cents; in cloth binding, one dollar and seventy-five cents. George Murphy, Incorporated, 59 East Ninth Street, New York, sole sales agent.

"About Lenses"

We are in receipt of one of the most helpful and informative little photographic books that have come to our notice for a long time. "About Lenses" is carefully written and well illustrated by an author who is not only thoroughly conversant with the subject, but one who is fully capable of imparting to others a great measure of that knowledge in an easily understood manner. This booklet will be of the greatest service to any photographer who is desirous of increasing his knowledge concerning lenses, their capabilities and their limitations, and every reader of this magazine should at once send for a copy. They can be obtained by addressing the Eastman Kodak Company, Rochester, New York, who advise that they will be glad to mail copies free to any of our readers who may send them a request.

"The Spell of China"

It seems almost unnecessary to comment upon the good quality of any addition to the well known "Spell Series", so uniformly interesting and informative are the works that go out as such. In this, the latest of the series, Archie Bell, the author who gave us two such intimate and entertaining volumes as "The Spell of the Holy Land" and "The Spell of Egypt" has, if possible, excelled himself in his delineation of the many charms that go to give the deep and absorbing interest to this Land of the East. So old in history, so new in our knowledge of it; so incredible to us, so matter-of-fact to itself, the intimate insight that the author gives us of the country is as absorbingly interesting as it is entertaining and enjoyable. A map, color plates and photographic reproductions add to the work. Published by The Page Company, 53 Beacon Street, Boston, Massachusetts. Price two dollars and fifty cents, net carriage paid two dollars and seventy cents.

"What Allah Wills"

In this story, Irwin L. Gordon, the author, gives us in his first work of fiction, a tale of love and adventure that is large and full, broad and demanding, a story written with the power that assures the thrill that all good tales should carry. Take a wealthy young American, a medical student who has exiled himself to the land of mosques and minarets to be of service to the lepers; a beautiful American girl he finds there, and who is induced to take up the Mohammedan faith, despite his protests; and, with Morocco, the quaint and mysterious, as a background and one can realize something of the possibilities the author has so well employed. The book is handsomely printed, and cloth bound. Published by The Page Company, 53 Beacon Street, Boston, Massachusetts. Price one dollar and thirty-five cents net, one dollar and fifty cents carriage paid.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Charles H. Weber Dead

Charles Henry Weber, president of the Henry C. Weber Company, 230 Woodward Avenue, Detroit, passed away at the home of his mother, on East Grand Boulevard, Wednesday, November twenty-first. Mr. Weber, who was only twenty-three years of age, was president of his firm, and one of the best known men in the camera busines in his section of the country. As a member of the Detroit Athletic Club and the Harmonie Society, and as one actively interestd in the welfare of his city, he was alike loved and respected by a large circle of friends and acquaintances who mourn his death.

Middle Atlantic States Convention

The Photographers' Association of the Middle Atlantic States will hold a convention at Odd Fellows Hall, Baltimore, Maryland, March nineteenth to twenty-second, inclusive. The program planned includes demonstrations and lectures by men of national prominence and General Secretary Columbus of the Photographers' Association of America is arranging for the presence of men high in the council of the nation. The Baltimore photographers are planning for entertainment out of the ordinary, and one of these features is a trip by steamer to the Naval Academy at Annapolis to give the photographers an idea of the development of the munition industry in Baltimore. The steamer will permit adequate viewing of the waterfront without subjecting the passengers to the terrors of the proverbial March gale. For years past the climate in Baltimore has been found ideal.

Rexo M. P. Film

Burke & James, Incorporated, have just placed on the market a new motion picture raw stock, known as Rexo M. P. Film, which is supplied in both positive and negative emulsions, perforated or unperforated, as desired. It is a standardized product of an up-to-the-minute film manufacturing plant, and repeated tests prove that it meets every requirement of practical camera and dark-room men. The negative stock has great latitude and speed, thus insuring good brilliance of the pictures, and an entire absence of "chalky" highlights and "sooty" shadows, even under adverse light conditions. Its orthochromatic quality means beautifully gradated pictures full of detail in landscapes, foliage, flowers, etc., at the same time producing the correct atmospheric effect. The positive stock gives a perfect scale of gradation and tone values, producing pictures in which the highlights are clear and brilliant and the shadows full of detail. The result is a picture that is at once soft and brilliant, without chalkiness or harshness. It has the density required for flat, thin negatives and for clear, legible titles. The printing speed is ideal. This emulsion is adapted to all kinds of tinting and toning. The company offers fifty and one hundred feet rolls at prices below the market quotations, with the understanding that they will be accepted only on a trial order. Full particulars concerning the film and this trial offer can be obtained by writing the manufacturers, Burke & James, Incorporated, 240 East Ontario Street, Chicago, Illinois.

Probus-Mandeville Photo Oil Colors

Those of our readers who appreciate colored photographic prints and delight in giving expression to their own ideas and ability, would do well to "try their hand" with Probus-Mandeville Photo Oil Colors. Their simplicity of application has made them extremely popular with both amateur and professional photographers. No special talent or artistic skill is required, in fact no knowledge of coloring whatever is necessary to obtain beautiful effects. There is nothing difficult about applying the colors. They blend perfectly, and should it become necessary to correct errors in judgment the colors may be completely removed or changed as desired.

without injury to the surface of any print. Although but recently introduced, Probus-Mandeville Photo Oil Colors are not new to the photographic fraternity. They are, the manufacturers state, strong, brilliant and absolutely permanent; and, they effectually replace the somewhat similar colors that were formerly imported from Germany. In view of the high cost of dye stuffs and color materials, it is important to note the very reasonable prices at which these high grade colors are offered. Trial sets containing ten colors in individual pans are priced at one dollar. Large sets sell for two dollars and fifty cents; or complete with special patent palette, three dollars and fifty cents. Necessary color sticks and complete instructions accompany all sets. The colors are obtainable from all dealers in photographic supplies, both in this country and abroad. Descriptive circulars may be obtained from your regular dealer, or upon request to the manufacturers, Messrs. Wolff & Dolan, 5550 California Street, San Francisco, California.

Making Starch Paste

There is entirely too much misunderstanding current about the making of paste. It keeps just as well as any other adhesive if a little preservative, carbolic acid, thymol, or the like is added, and a little of some simple aromatic oil will give it a pleasant perfume. The idea that there is any particular adhesive properties in flour or starch, as such, is also a mistake. The desired "stickiness" is secured by altering the composition of the mass through the action of heat in the presence of water, the right degree of heat and proper amount of water influencing the result. If this was not the case there are a lot of culinary concoctions that would be rather unpleasant forms of food; in fact, would be more valuable as a source of amusement than as one of nourishment, when eaten. Take about a tablespoonful of starch and work it into a smooth, thick cream with some cold water, then put the vessel into a larger one containing hot water until the mixture is well warmed, and finally pour in about a pint and a half of boiling water, while stirring vigorously. At this point the preservative and perfume, if any, should be added, just enough to make its presence known by the odor being sufficient. Poured into a jar to cool one has only to remove the skin that will form on the top to find an excellent adhesive that it will be a pleasure to use. Such paste does not, of course, have the good quality of Higgins' paste in the way of non-cockling, working fluid under the brush, and the like, but it will be found greatly superior to the paste made in the ordinary slipshod manner of boiling together some starch and water.

Illinois College of Photography

J. E. Browne, class of 1914, was elected second vice-president of the Texas Photographers' Association. Frank Adams, 1903, of Portland, Maine, is vice-president of Maine for the New England Photographers' Association.

Charles Gallagher, a former student and instructor during 1907 and 1908, and who has, in the meantime, been a member of the House of Representatives in his home State of Nevada, has joined the National Army.

Julio Pacheco of Merida, Yucatan, Mexico, who has just finished a course in photo-engraving, in which he was very successful, has gone to Chicago to purchase an equipment for the plant which he expects to open in his country.

Developing After Intensifying

An Ohio correspondent has been acting upon the advice to follow the mercuric chloride bleaching, in intensifying, by development with a non-staining developer, instead of ammonia, where decided increase of density is required. He is, however, troubled with a reticulation of the image that results a little too frequently for his peace of mind. I have had no personal experience in the matter but I believe the trouble was dealt with some months ago in one of the foreign magazines, as I find a memorandum in my note-book explaining that the mercuric solution used for bleaching should be made distinctly acid and then diluted enough to avoid the trouble. The formula recommended calls for one part of a saturated solution of mercuric chloride in three parts of water, with three drops of hydrochloric acid added to every ounce of the dilute solution. It is also recommended that the first two or three washings following the bleaching be done in a one per cent solution of the acid, followed by several others of clear water, the development then following.

V No. 2 FEBRUARY, 1918 Price, 10 Cents

SAN FRANCISCO
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CAMERA CRAFT

SAN FRANCISCO
CALIFORNIA

Several belligerent nations
of Europe use

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CAMERA CRAFT

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FAYETTE J. CLUTE, Editor
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What the Government Wants of Lens Owners

By Sigismund Blumann

Early in October and before the Signal Service Department had issued its first "Enlist Your Lens" circular that now is, or should be, familiar to every photographer, Captain Charles F. Betz, Signal Corps, U. S. R., wrote me, asking that some decided activity be put on foot to the end that the particular lenses his department needed might be started toward Washington. The circular mentioned, in its unprinted form, was submitted; and, such activity as its rather ambiguous information permitted, was begun. My own meager knowledge as to just what was wanted and the desire of others to appear knowing by freely voicing unfounded opinions and misinformation, must have resulted in the department being flooded with a mass of unnecessary correspondence that only consumed and wasted time better spent. To avoid this let us carefully read and reread the following extract from the latest official circular:

> "People of the United States are asked to help the Signal Corps of the Army to get lenses enough for cameras for the fleet of observation airplanes now being built. The need is immediate and of great importance; the camera lens is the eye of the Army. * * * England had to meet this same difficulty in the earlier stages of the war by purchasing the lenses of the required type from individual owners. England is now making better lenses than the German ones formerly imported, but no faster than needed for her own uses. The Bureau of Standards of the United States Department of Commerce is now perfecting a substitute for the German "Crown Barium" glass used for lenses, and American manufacturers will later be able to meet the needs with special lenses of new and improved types now being designed for this work.
>
> "The present situation, however, is that with airplanes soon to be ready for service, suitable lenses cannot be bought. Possessors of the required types are urged to do their bit by enlisting their lenses in the servic of the Army. * * * All makes of foreign lenses are needed, namely of a working aperture of f-3.5 and f-4.5,

with focal lengths of from eight and a quarter to twenty-four-inch focal length. The following are some of the foreign makes wanted:

"Carl Zeiss Tessars, Bausch & Lomb Tessars, Voigtlander Heliar, Euryplan, Cooke, Goerz, Bush, Ross, Ross-Zeiss, Krauss, Krauss-Zeiss, Steinheil-Isostigmar, Rodenstock. In addition, matched pairs of stereoscopic lenses, with speeds of f-4.5, focal lengths of four and a half, five, five and a half, six, six and a half and seven inches are needed.

"The lenses most needed by the Government are in the hands of professional, commercial and portrait photographers, who are reluctant to give them up. These photographers must be brought to realize that their Government should not be handicapped by them, and it is their patriotic duty to offer their lenses for use. There are many makes of lenses on the market that answer all the purposes of commercial and portrait photographers, and this fact has been proven beyond a doubt by photographers of great renown who have sold their lenses to the Government."

With this and with the information contained in recent letters from the Photographic Division, it is now possible to make definite statements and it is to be hoped that so doing will lead to immediate and definite action on the part of those having the required lenses, and for which they may have only occasional use, to the end that such lenses may be placed at the disposal of our Government which has both an immediate and a continuous use for them. The requirements of the Government are much more exacting than our own, and do not permit of the substitution that we can easily indulge, frequently to the advantage of our work.

First: You were invited to enlist your lens. That failed, from the start, to interest the lip patriot. No, it is not meant that you are asked to give anything to save your home from invasion or assure your posterity immunity from an enslaving indemnity. Cheer up; you are given an opportunity to sell, at a fair price, that for which many of you have almost no use, and few of you any real need. What is meant is this: You are to put a price upon the lens, send it to the Equipment Division, Signal Corps, Signal Equipment No. 33, 119 D Street, N. E., Washington, D. C. There it will first be carefully tested and then your tender accepted or rejected. You are given an opportunity of gouging your country or of doing the fair thing, as lies in you.

Secondly: You are requested not to start a long campaign of correspondence. This is not a courtship by mail. The War Department and its various divisions are pretty busy these days with a few urgent details across the sea and here at home that require considerable of its time. Just send your lens. That, the price wanted, and your name and address, is all the Government requires of you. They could, I presume, condemn or draft such lenses as they require; at least, I hope they have that power. If not, and the need be great enough, they should be given that power. But they are letting you off easy. You are to stay comfortably at home and continue making salon pictures, while a couple of millions of your fellows give up their lives for you. These lenses are not going to be used to make pretty pictures, nor to kill humans. So any sentiments you hold need not be outraged. They are to be devoted to gathering information in such form as will help to save the lives of hundreds of the fine, upstanding fellows in khaki you see on the streets; perhaps to save the lives of your brothers, or sons, or yourselves when the call comes for you. Do you get that?

Thirdly: You are asked not to be influenced by information offered

IN EASTLAKE PARK, LOS ANGELES By EDWARD LAROCQUE TINKER

by a member of your club, camera fraternity, or by the salesman from whom you buy your supplies. They know no more about it than you do,—or than I do. We have nothing to know except that certain lenses are wanted and that if you have one, as far as pertains to you, that particular lens is the particular one the Government wants.

This sounds brusque. It is meant to be red-blood stuff for red-blooded Americans who can take and give from the shoulder. You know me; and I think, after years of writing for you and reading the liberal and more than kindly letters you have written me, I know you. Let us get into motion.

One man asked me if it be true that the Government was paying list prices for lenses. I told him the Government was paying from somewhere this side of fifty dollars a month an average head for the risk of human life to protect our women and children and perpetuate our institutions as we suddenly find we are glad to have them perpetuated. Oh! I have been a crab myself. I'm a radical, if you know what that means. I don't, but that is what my friends used to call me. But somehow I feel you and I have no difference as great as the difference we both have with possibilities that threaten us. I wish I were twenty-one and fit, that is all I can say. And, if by years or condition you cannot go where the little fracas is going on, and take a hand in it, perhaps you feel an irresistible impulse to send that lens as your substitute. The Government will not refuse to accept it at a valuation of one dollar, if it passes the test, if it is what is wanted. This man who expects list price for a second-hand lens, when a new one that will answer his purpose costs much less, should be made to pay through the nose for his bread and butter,—and sugar, because these are also demanded and scarce. The man that I mean is a fine fellow, but he hasn't stopped to separate his business instinct from his good sense.

Another good friend gave it out that he knew all about the matter; that

when you wrote to Washington you simply got a blank form to fill out; and, when that was sent in you heard no more about the matter. I know nothing about blank forms in this connection. Why should you write? Why should you fill out a form? Send your lens, man, send your lens.

Now let us have a concise resume. We will presume you have a Zeiss Tessar of f-3.5 or f-4.5 speed and of from eight and a quarter to twenty-four inch focal length; or a Bausch & Lomb Tessar of the same working aperture and focal length, or any other lens coming within the requirements reproduced herewith. Note that these listed, only these and no others, are wanted. Save your stamps and save the time of the War Department. Also note that the eight and a quarter focal length lenses are especially needed. As these, most fortunately, are the ones commonly owned, it is to be fervently hoped a stream of them will be flowing Washingtonward from today on.

Wrap such a one of these lenses as you possess in tissue paper and box it in wood; make, in short, a safe package. Write your name and address, together with price asked and date of sending, on a card or tag and tie it securely to the lens. Attach a like card to the outside of the box, then wrap it in stout paper, tie securely and address:

Equipment Division, Signal Corps,
Signal Equipment No. 33,
119 D Street, N. E.
Washington, D. C.

Post it with the proper stamps affixed and insure it for a few cents more. The department will test it and in due course of time you will get either your lens back, as not standing the test, or the price.

This is as I understand it. It will bear trying out. If more information is wanted, if you wish to know whether you will get paid in gold, silver or paper; or whether a rapid rectilinear almost as good as new, or a 3A Kodak will not serve the army, do not write to Washington to inquire. Just read the quotation from the circular and take it for final that what is specified therein is what is wanted, and nothing else.

And this is all I know about the whole thing,—and more. It is all the Editor knows about it. And it is just a little more and a lot "accurater" than what the man on the street knows about it. The country we love to claim as ours has asked us photographers, in loud tones, "Are you with us?" and as we send in our lenses we shout back as loudly: "Ab-so-lute-ly".

The successful men are they who have worked while their neighbors' minds were vacant or occupied with passing trivialities; who have been acting while others have been wrestling with indecision. They are the men who have tried to read all that has been written about their craft; who have learned from the masters and fellow-craftsmen of experience, and profited thereby; who have gone about with their eyes open, noting the good points of other men's work, and considered how they might do it better. Thus they have carried themselves above mediocrity, and in striving to do things the best they could, have educated themselves in the truest manner.—*The Printing Art.*

A Flashlight of a Banquet

By M. Gorodess

With Illustrations by the Author

"My Dear Baxt:

"This will be your opportunity to witness a flashlight made by the smokeless system, and at the same time you can see an event in history. A banquet is to be given at the Plaza Hotel to the Russian Commissioners. In a few weeks some of the men who will be present at this affair will either make a good republic or be hanged for their trouble. Come to my office at 5:30 and we will go to the Plaza. Bring your note book along and take down everything that is done. This will be your chance to get that lesson in smokeless flashlight work that you have requested.

"We will take five bags with us, packed in a grip, with a set of sticks to hold the bags while loaded. A 12x20 camera, a twelve-foot tripod, a developing outfit to make a proof on the spot, and a long focus and a short focus lens. All these grips have been looked over this afternoon by Mr. Albright, whom

BANQUET—RUSSIAN EXTRAORDINARY MISSION, HOTEL PLAZA, NEW YORK

we will take with us. If I can spare them, I always have three men on a job,—one at the camera, one near the tripod, and one near the bags: Safety first.

"Each of us takes a grip, and now for the subway to the hotel. But before we start working, let us go in and tell the manager of the hotel that we are to make photographs of the Russian banquet. We will show him our

card so that he will know who is working there. If he does not know us, he will say that the walls are decorated with pure gold and that the curtains are worth from five to six hundred dollars. You can readily see that he will not let you inside, to do the work, without this caution and unless he knows that your equipment is of the proper kind.

"The manager tells me that the banquet hall is one flight up. On seeing my card and hearing from me that I use Prosch bags, he let me through without any objections. Let us look at the hall. It is sixty-five feet long and about fifty feet wide, with balconies all around, except at the front of the room, where the head tables will be. We are a little ahead of time, as the dinner will not start until 8:00 P. M. That will enable us to work better and we will have plenty of time to plan for the job and open our grips. The balcony makes it easy for us to hang our bags. Let us carry up our grip containing the things and start about ten feet away from the head table, so that the light from the first bag will light up the faces of the speakers there.

"Now notice that, when open, the bag is oblong. Two chains hang inside from the center of each side. We will use, as usual, a Prosch D-2 cartridge, containing about one-half ounce of loose powder. This we will place inside of the lamp, being sure that it hangs in the center of the bag. Otherwise the flash might scorch the fabric. These cartridges are already supplied with fuses. All we need to do is to insert the two-pronged wire through the eyelets in the envelope. Now we test it with the Prosch current-tester. You hear the buzz. That proves that our connection is safe and will work without fail.

"Of course you understand that these bags were looked over by my assistant and all the wires and open connections tested and cleaned so as to give good contact. Mr. Albright will be kind enough to hold the bag on the stick provided for the purpose. I will now tie the bag at the bottom and smooth out the wrinkles caused by tying. Watch me lift the bag over the balcony and fasten it thereto, with the widest part of the bag toward the banquet room. Observe that I am careful to hang it straight. If these balconies were draped with fancy silks, etc., I would have hung a piece of fireproofed fabric, such as Prosch supplies, over the balcony before hanging my bag. As you see, the Plaza balcony is of metal, possibly brass plated with gold, and of course it will not burn. So we are safe, as the heat from the flash or its force cannot do any damage.

"Now let us hang the next bag about twenty feet away. As this room is in brown and gold and we will not get much reflection from the walls, we will hang our bags a little closer. The Prosch people say that about twenty-five feet apart is best, and so it is. But in this case, because of so much dark color, I think twenty feet will be better, and so let us hang the third bag that distance from the second one.

"This will bring us near to the end of the room and close to the camera. The room being wide and dark, I think I will hang one bag in the back of the room to light up the front faces. As a usual thing, I never use a front bag, because I prefer side-light only. In this case, let us break our rule and be on the safe side. We want to be sure that we will have enough light. You see the third

bag is not supposed to light any more than twenty-five feet, but this hall is at least fifty feet wide. As our bags are all hung, we wire them by joining the connectors extending outside of each bag. This will put all of our four bags on one circuit. A wire from the fourth bag is ready for use with our Prosch switchboard, just before we take the picture.

"Now we can go to the dining-room and have dinner. I am sure we will make enough to pay for the meal, anyway. We will ask the manager where the dining room is, just to show him that we are customers. That may help

DINNER TO JOHN H. SCOTT, CENTRAL Y. M. C. A., NEW YORK

us later, especially if any of the banquet chairs or tables happen to be in the way of our camera or tripod. Our dinner being over, we have about half an hour in which to get ready. Let us see the electrician and get him to give us a line that is not dead or overloaded. We do not need much juice, but we do want the work done so that everything will go smoothly. He has located a wall socket and will fuse the line. You see that a good cigar has done something for us already. Now we shall connect our switchboard with this wall socket, and I will bridge my finger across the connector at the switch. I feel a little shock. That tells me that the wiring is all right.

"We will set up our tripod about twelve feet high, so that we can look over the heads of the guests. We will put the tripod in the corner of the room on the side where the bags are facing the guests' tables. Now Mr. Albright, the camera, please. Let Mr. Baxt set it up and get a little practice at the same time. Notice that we are to use a seventeen-inch lens. This one happens to be a Goerz Dagor. A ten-foot ladder will get us up. Now tilt the tripod down a little in front and tilt the swinging-front on the camera about a half inch. Mr. Albright will be seated at the nearest table and hold a light for Mr. Baxt to focus by. When you get the front sharp, Mr. Albright will walk over to the guests' tables, and will hold a light there.

"Now Mr. Baxt, please turn the camera so that you will just escape including the bags in the picture. Tighten the camera to the tripod. And now

tell me how much the lens will take in at your left. This is to know just how many of the guests will get into the picture. If an important person sits where he will not be included, we will ask the committee to give him a seat where he will. The camera is now set. We stop the lens to about f-11, although it will cover at f-7.7. Let's stop down just a little, to get more definition. Cover the lens with the cap. Put in your plateholder, pull your slide and let us wait until all the diners are seated.

"The chairman of the committee of arrangements is nodding to us, which is his signal that we shall go ahead. Please let me have the bag-wire at the end of the fourth bag and hand me the switchboard. See that the switch is open, then insert the bag-wire in the open end of the connector in the switch. Now, ladies and gentlemen, if you will please look toward the camera and just as soon as you * * * and while the audience is unaware of what I am doing, I take the cap from the lens, throw on the switch, and the room is filled with a powerful light. The lens-cap is replaced while the audience, mostly foreigners, is applauding. They had never seen a smokeless flashlight before.

"The electrician is good enough to offer us his private room to develop our plate. I will take the holder and let my assistant see to packing away the camera, flash bags, wires, etc. My developing outfit contains two 12x20 Japanned trays, a bottle of Mitus developer and some Hydroquinone, the first, supplied by my friends, the Prosch Company, is as good as Metol, and I use it because I have found it best both for developing my plate and for making my proof. In addition, my outfit contains hypo in dry form, a kodak electric safe-light or a kodak candle lamp, two different grades of developing paper, a sheet of thin celluloid to cover the wet plate so that we can make a proof, a few towels, some paste and a few mounts, also a printing frame. All of this, as you see, fits into a small grip and weighs not much more than twenty pounds.

"Let us close all the doors, put out all lights, fix the red lamp and develop the plate. I use Imperial S. S. or Central Special, double-coated plates. Notice the plate comes up fairly even and has plenty of exposure. Beneath the balcony it was a trifle under-exposed. So we will force this up with a little strong developer. In a few minutes the plate will be developed far enough. I never carry my developing too far, Baxt. I like a medium thin plate better than a strong one. It is quicker to print and the high lights are not choked up.

"Washing under the tap for a second is enough. We now cover the film side of the plate with the celluloid to see that no air bell or water will interfere with the contact with the printing paper. We use for this negative a medium speed paper, expose it a few minutes to the electric light in the room; and, after making three proofs we will return to the guests and try our luck at selling.

"Baxt, you take one proof, Mr. Albright the other and I will take the third. We will sell these pictures for one dollar and a half each and give each buyer a receipt with a number on it. Get the cash in every case and promise delivery, by mail, in a week.

"Now, let's count our receipts. You say you have forty-two dollars, I have eighty-five and a half and Mr. Albright has sixty. That makes one hun-

dred and eighty-seven dollars and a half all told. Well, this isn't such a bad night's work. Of course, the Russian Commissioners will probably never meet again, and this picture will be a very good souvenir. That's why we sold so many.

"Now, Baxt, you can write to the Prosch Manufacturing Company for four bags, complete; with current tester, lamp, switchboard, etc. I am sure that one, two or three jobs will pay for the outfit. If you want any information after you get the bags, write me, as I'm always glad to help out another photographer. Good luck to you!

"Wishing you all success.

(Signed) "M. Gorodess.

"Mr. Irving Baxt,
"837 Greenpoint Avenue,
"Brooklyn, New York."

Recording the Changes

By W. Clement Moore

In practically every one of the United States, and in many sections of some of these States, vast changes are being brought about, due to the extensive preparations for war which are in progress everywhere. These all have a very material effect upon the community life in and around the towns or cities where the various war industries are located. Many homes are being bought or leased by the Government, and hundreds of manufacturing plants, warehouses and commercial enterprises are almost every day being put into operation for war purposes. Present owners are either stepping out or re-adjusting their work, homes, or places of business, to suit federal needs.

All of this means sacrifice, but it also means plenty of work and prosperity as well; and at the same time it means many very great opportunities for alert photographers in the sections of the country so affected. For instance, if a private home should come within the limit of a plant or industry to be established by the Government, it will be purchased or leased, and perhaps converted into a building of a very different character; and the former owner will, of course, want a photograph of his old home before it passes out of his hands and becomes wholly changed in appearance and use. In like manner owners of factories, business houses and industries will quickly grasp the opportunity of owning good pictures of their places of business while they are under their care and guidance.

But these are only a few of the thousands of opportunities. Roads will be changed, new railways built and thousands of other minor changes; all of which will give you a chance to get the "before and after" pictures that will be of no small cash value after a year or so, and will, of course, also have a good immediate cash value just as soon as taken and finished. Thousands of cus-

tomers for your prints will be found not only among just plain owners, but the contractors, builders and workmen employed in the new construction work will also want pictures. In addition, there should be a very heavy transient sale for such pictures, mounted and on post cards, provided your studio or display space is centrally located on streets where those going to and from the camps, plants or industries which you are photographing, are forced to pass in daily travel.

Like all other lines of selling, you will reap the best results if you plan your advertising and selling campaign systematically. Circular letters or personal letters to every person affected in any way by the changes going on in your community will, of course, be the very best way to secure your orders. By this method you will get the ready money for the first work done and at the same time have the use of prints and negatives for future selling.

To protect yourself in this work and also to protect and be fair to your customers, it will be found the best plan to print or stamp on every delivery envelope or package a notice similar to the following:

NOTICE: We have made our prices on all photographic work very reasonable and we would like to reserve the right to use prints of scenes for sale to magazines, etc. If you have any objection will you please advise at once. Of course, photographs of persons will never be used without the owners' consent. Such a stamp need be used only on envelopes containing photographs actually ordered; for, of course, you are under no obligations to any person for the negatives taken of your own accord; unless, indeed the Government should interfere with your work, which is not likely to be the case, except in rare instances.

The newspapers for many miles around you will also afford excellent advertising mediums and should prove highly profitable. Use a small advertisement and simply announcing that photographs of the changes in the social, commercial and industrial life of your section may be secured at very reasonable prices.

Finally, there is nothing about such work that should interfere in the least with regular studio work in the line of portrait photography. It is simply a good plan whereby those properly situated can double their incomes.

Realism In Art

But, after all, the only principle in Art is to copy what you see. Dealers in aesthetics to the contrary, every other method is fatal. There is no recipe for improving nature.

The only thing is to see.

Oh, doubtless a mediocre man copying nature will never produce a work of art; because he really looks without seeing, and though he may have noted each detail minutely, the result will be flat and without character. But the profession of artist is not meant for the mediocre, and to them the best counsels will never succeed in giving talent.

The artist, on the contrary, sees; that is to say, that his eye, grafted on his heart, reads deeply into the bosom of nature.

That is why the artist has only to trust to his eyes.—Auguste Rodin.

Photographing Wild Flowers

By A. J. Soares

With Illustrations by the Author

To many of us wild flowers are trivial things, beautiful perhaps, and worthy of a passing glance, but that is all; yet how many of us are conscious of the pictorial possibilities inherent in them. I regret to say that they are few, yet the reason seems not apparent, unless it lies in a certain elusoriness attending the rendering of their natural beauty.

In spite of its being one of the most difficult branches of photography to do justice by, nothing in the realm of photography endeavor is so fascinating to me as the photographing of our wild flowers. It is admissibly evident that all flowers are beautiful, yet how much so are the wild ones whose charms are so particularly appealing. One does not have to go far for subjects in this class, as every locality is so rich in its own particular treasures that one has only to go out for a few hours' walk in order to find sufficient material for a day's pleasant work. In the fence corners by the wayside, among the billowy grasses on the hillside, in the meadow, in the marsh, or in the secluded recesses of the quiet woods you will find them ready to be your friends, impatient of the moment when they may impress themselves on your photographic plate. No

"SEA DAHLIAS" COREOPSIS MARITIMA

"WILD HYACINTH" BRODIAEA CAPITATA

one who has embraced photography for either profit or pleasure should complain of a lack of material to photograph, when nature has been so generous with such creations of grace and beauty.

A good many of the wild flowers I have photographed I have raised from seeds, bulbs, or from plants purchased or otherwise obtained from seedsmen or individuals making a specialty of that sort of thing. So doing has been a great help to me, in that I have had my flowers at hand, ready to be photographed, at any time that I had the leisure: I have also had the added pleasure of their daily companionship, no small matter to one who, like myself, is a lover of all that is beautiful in nature. There are few wild flowers so insignificant that we can afford to overlook them, for even the most humble specimen by the wayside will often make the most charming picture.

The requirements for the pursuance of so interesting a hobby are not many; but, aside from the apparatus required, I would mention, as one of the necessary prerequisites, an inherent love of flowers. Without that to insure perseverance and enable one to surmount the many difficulties that will present themselves,—and I assure you that they are legion, it will be well nigh impossible to succeed.

As in other lines of endeavor, one should have the best tools obtainable compatible with the conditions of one's purse; but if one cannot afford an anastigmat lens, a rectilinear one will do. It should not be of too short a focus, for in picturing small flowers it is sometimes necessary to make them at very close quarters. This necessitates stopping down to a small aperture to get the required depth of focus, with the consequent prolongation of exposure, thereby inviting disaster should a leaf or blossom shift its position during the long exposure.

Any camera will do, provided it is not too small, unless one cares to go to the trouble of enlarging from a small negative. I have found from experience that the 6½x8½ size is about the right one to give a good representation of most flowers. One may as well settle down to one size only, because it is much more satisfactory to have a collection all of one size, rather than a mixture of odd sizes.

Nearly all of my work has been done with an 8x10 view camera on 5x7 plates, using kits for the purpose, although in my latest pictures I have used the 6½x8½ exclusively, a size I consider most suitable to the work. A rigid tripod may be used, but provision should be made against its slipping on the floor. A cheap studio stand has given me satisfaction. A ray screen is a necessity and one should not essay the work without, despite of all that has been said to the contrary. A ray screen necessitates the use of orthochromatic plates, as using one without the other is not good policy, especially in dealing with flowers of an orange, yellow, or red color, where good color values cannot be obtained unless they be employed.

Backgrounds may be extemporized from material at hand, but I have found that large sheets of cardboard of different colors are very suitable. If a shaded ground is wished, one may be made by bending a large flexible card into a half-circle, or nearly so. The side nearest the light will cast a shadow producing

"BEAUTIFUL CLARKIA"
CLARKIA ELEGANS

"YELLOW GLOBE LILY"
CALOCHORTUS PULCHELLUS

a very pleasing blended ground. A stiff wire, turned in at the ends, bent to the required shape, and attached to the back of the card will hold it in the desired position. If one is handy with a brush a very satisfactory background may be painted on muslin that has been attached to a stretcher.

"BLUE PENSTEMON" PENSTEMON SPECTABILIS

"BIRD'S-EYES" BILIA TRICOLOR

The disposition of the subject should be simple in order to be pleasing, and the arrangement should conform, as nearly as possible, to the habit of the plant as found growing in its natural state. By simplicity of arrangement is not meant that a few blossoms should be loosely thrown together in a jar or other suitable receptacle, but rather the reverse. To produce a simple arrangement requires some little thought and study, yet in the end one will be fully repaid for the time spent; for, care at the first may obviate the necessity of making another exposure, thereby saving expense if nothing else.

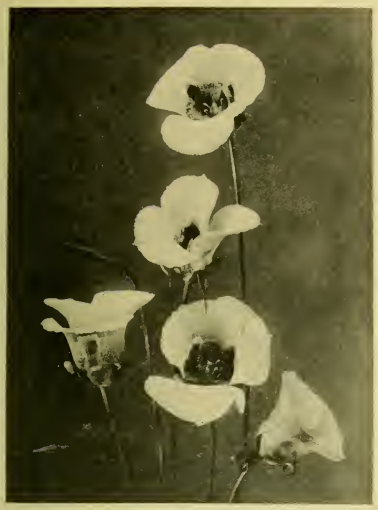
It is not the best of policies to include too many flowers or too great a variety of colors. Flowers in pairs should be avoided, as odd numbers are more conducive to better arrangement and to a more pleasing picture. If it is at all necessary to include flowers of different shades, let the lighter shades occupy the center of the picture, thereby creating a unity of interest. Flowers of a pendulous habit should be so pictured, rather than in an upright or unnatural position. Neglecting this would create a false impression regarding the habit of the plant, as it is found growing in its native habitat. These are better arranged on a card impaled on pins stuck through from the back. A good many flowers are better taken this way than in any other manner, especially those in which seed-pods, blossoms, roots and leaves are included, as in work made more for botanical reference than for any other purpose.

From personal experience I have found that the best receptacle to hold the flower during the exposure is a wide-mouthed bottle with a cork in which notches have been cut to admit the stems. The bottle may be filled with water, or preferably moist sand, the cork put in place and the stems stuck through the notches in its side. This is much better than arranging them loosely in a vase, as they will retain their position much better and with less danger of movement to mar the resultant picture. In my own work this shifting or drooping presented an obstacle hard to surmount, until the above mentioned idea occurred to me. The notches should not be too large, but only large enough to admit the stems and keep them firm when the cork is pressed tight.

If arranged in a vase the latter, as a rule, should not show in the picture; but, if by choice, it is required to show, then let it be of a plain and subdued color so that it will not detract from the principal object in the picture,—the flowers themselves. Let there be no angular or straight lines, or repetition of lines and masses to produce discord; preference being given to curves and variety in spaces. As the vertical line is denotative of grace and beauty, it should be employed as much as possible, but it should be made suggestive rather than too apparent. The picture space should be properly filled, but not crowded. A single blossom, carefully arranged, will often produce a more pleasing picture than a number of flowers loosely thrown together.

Some flowers have a tendency to wilt as soon as gathered, but even with these, success is assured, provided they are picked in the late afternoon and placed in water. By next morning they will be in good condition to photograph.

With this class of work the best success is obtained indoors, and practically all of my pictures of wild flowers have been so made. In many cases the photographing of flowers in their native haunts is an absolute necessity, despite



"MARIPOSA LILY"
CALOCHORTUS PURPURASSENS

"YELLOW MARIPOSA LILY"
CALOCHORTUS CITRINUS

the many difficulties such work presents. The light may not be just right or a breeze may be stirring sufficient to spoil all our result in a blur in the negative. Still, when conditions are just right one may get a very pleasing picture, one even more so than when working indoors, for the picture will show the flower with its environment, a desirable quality, especially to those botanically inclined. Only those flowers that are perfect, or nearly so, should be photographed as an imperfect specimen will certainly spoil an otherwise perfect picture.

The lighting should be such as to render a pleasing representation of the subject, well modeled, and with plenty of detail. If taken in an ordinary room, the flower should be set somewhat back and to one side of the source of light and four or five feet to the side of it. The light should come from the upper part of the window with the lower part screened by a piece of muslin or other suitable material. A reflector should be brought up to the shadow side to give the necessary detail and relief. The aim should be to get a good representation of the flower, one showing in detail its pistil, stamens, and other parts, contrast being avoided as much as possible. One should stop sufficiently to get at least all the flowers in focus, although it does not matter if a few leaves at the back are a little "fuzzy".

Do not strive for oddities, as they are not consistent with this class of work. Freak lightings and "fuzzy" effects are all very good in certain classes of work, but in flower photography they are out of place. They do not give one the texture, nor the modeling which is of the utmost importance in this class of work and which can only be secured by proper lighting, right exposure, and care in the development of the plate.

The matter of exposure is for each individual to determine for himself, as

it will vary with the light, stop, plate and the ray screen used. If one has not the experience necessary to determine, by observation of the image on the groundglass, the exposure to give, then it were better for him to invest in one of the many exposure meters on the market. Although I do not speak from experience, having never used one. I believe that Steadman's Aabameter should give the satisfaction desired.

Anyone interested enough in this line of work to make it a hobby, should by all means do his own developing and finishing. As there is not much choice nowadays in regard to developers, one may as well use the old standby, pyro. It should be mixed in such proportions and so diluted as to insure plenty of detail and not too much contrast. It is now rarely necessary to go to the trouble of intensifying or reducing a negative; as, by choosing the grade of paper suitable to the negative in hand one may be quite sure of a good print.

As a great deal of the pleasure derived from the photographing of wild flowers comes from our daily association with them and the learning of their common and botanical names, it adds to one's enjoyment to study some of the many books on the subject in order to become better acquainted with the different varieties. Surely half the pleasure would be lost were we unable to name the flowers we photograph, and it is surprising how much pleasure and lore can be derived from reading and study of the works of different writers.

Be Loyal To Your Profession

Has it ever occurred to you that the successful attorney, physician or clergyman never loses an opportunity to praise his profession, to laud its usefulness to society and to congratulate himself upon the fact that he is a humble member of that profession? Yet it is seldom that any one hears the photographer singing the glories of his profession, or giving thanks for his membership in it. That is why an occasional photographer has reason to complain that his profession is not respected. To change this condition of affairs the photographer must be loyal to his kind and his craft.

Duo-Negatives For Excessive Contrast

By Edgar Felloes

All of us, who do our own developing, have at times experienced the difficulty of securing, with contrasty subjects, the requisite amount of detail in our shadows without getting over-density in our lights, and this is especially the case in our sunlight pictures. The following method of dodging the difficulty will prove helpful, when understood, and there are many subjects that will lend themselves to this treatment. It has its limitations, of course, but these again largely depend on the ability and resourcefulness of the worker. The plan is simply this: Make two negatives, one for the lights, a short exposure, and the other fully timed for the shadows; which, as the reader will readily see, makes a tripod or camera support necessary. As most amateurs work with films, the two negatives are easily combined; hence the name, duo-negatives.

We shall require some varnish to protect certain portions of our negative; and, if we take some of our discarded films and remove the gelatine with the aid of hot water, the remaining celluloid, when dissolved, will be excellent for the purpose. Procure a small quantity of amyl acetate and place in it a small quantity of the shredded celluloid film. As to quantity, all that is necessary is to add the shredded film until the liquid is the consistency of mucilage. It is then ready for use and can be applied with brushes of suitable size.

Let me now give a simple illustration to show where this method of printing may prove useful. Suppose we wish to photograph the interior of a well furnished room having a door or window through which is disclosed a view of a sunny garden. With the camera in position we make the first negative, say, the interior. Give this exposure plenty of time, perhaps several minutes. In some cases a weak flash to light up shadows may be advisable; but in any event, be sure to get all detail. Having made this exposure, we turn attention to the garden; and, being careful not to move the camera in changing the film, give this view a quick exposure. The two films are then developed in the usual way, and dried.

The next stage of our work is to paint the celluloid varnish over the whole of the interior negative, excepting that part representing the door or window. Be careful that every part of the negative to be retained is smoothly and thoroughly covered. This is not at all difficult, as our celluloid varnish has a somewhat oily nature and does not set quickly, making brush marks easily avoidable. I use a red sable pencil or brush for outlining the part or parts to be left uncovered, and a camel's hair brush for filling in the larger areas. Straight lines may be run with a draughtsman's ruling pen. Though I, personally, prefer the brush, the ruling pen may be more satisfactory to some workers. The varnish applied, it must be allowed to become thoroughly dry. The probability is that no work will be necessary on the second or garden negative, as it is likely

to be practically free from detail except in the well lighted portion showing the garden through the door or window. Should it be thought necessary to remove any excessive detail from this film, protect the garden part of the view with the varnish, treating in the same way as the first.

Our next step is to mix up a fresh solution of the well known red prussiate and hypo reducer, as follows:

A: Water ..... 16 ounces
Hyposulphite of soda ..... 1 ounce
B: Water ..... 16 ounces
Red prussiate of potassium ..... 1 ounce

As this last solution is affected by light, it should be kept in the dark when not in use. For immediate use add one ounce of A to eight ounces of B.

Work in subdued daylight. The negatives should be soaked in water half an hour before reducing. Do not try to rush matters with an over-strong solution or the film may become stained. If, after standing in the tray or being exposed to a too strong light, the reducing action slows down, pour it off, rinse the negative and apply a freshly mixed quantity of the reducer. I have had a negative in the solution over an hour without ill effects and I have so completely removed intense blacks that not even a trace was left.

Having reduced out the undesired parts or those parts of the negatives not protected by the varnish, wash and dry them. Lastly, bind the two films together along one edge, with lantern slide binding, taking care that they are in perfect register. The duo-negative is then ready to print from in the usual way. It is not necessary to remove the varnish before printing; it being colorless it has no bad effect.

I will mention another instance where duo-negatives will serve a useful purpose. We are all familiar with pictures of waterfalls in dark places, and most waterfalls are so situated. Such subjects are only slightly more difficult than the first one we considered. Give a snap shot for the water and a very full time exposure for the surrounding trees, vegetation or rocks, generally in deep shadow. The join of the two exposures must be made to follow the deep shadows along the banks and around rocks. Another subject frequently met is a distant view framed by trees and their overhanging branches. These doubtless look very pretty to the eye, but the photographer finds that he had either to be satisfied with a silhouette at the top or else trim away that part of his print to make it pass. This kind of a subject is a little more difficult to handle than the others mentioned, but the trouble can be overcome with a little ingenuity.

Finally, there are those beautiful evening views, that we all delight in attempting. Most of us are gratified by the good picture secured of the sky itself, but the landscape portion is invariably a disappointing, undertimed affair. There is no atmosphere and frequently there is only a band of meaningless gray, or perhaps black, according to the depth of printing, extending from a third to a half way up the picture. With duo-negatives this unfortunate condition of affairs is not at all necessary. One can, in fact, by photographing the evening sky effect from a point where no prominent object in the landscape

intervenes, and using the same plan of reducing out the parts not wanted, print it in connection with an entirely different landscape. To do this, however, involves the use of considerable skill in applying the varnish to conform to a line not shown on the negative being worked upon but a line indicated by the horizon or sky line of the other member of the combination.

Dallett Fuguet, writing in *Camera Notes,* says: It is a trite dictum of art that any one may take anything already done and do it over again and make it his own, provided he can do it better than it has been done before. If he succeeds, he is justified; and the verdict of time, which confers the permanent laurel wreath, will uphold him. But if he fails, he is doomed to oblivion, if not to ridicule, or even to obloquy. For he has dared to use the already minted gold of art, to deface the stamp upon it; yet has not given in place of this a sharper, clearer imprint. Nothing but this most difficult of all things, a decided bettering of the beauty already coined by art, can excuse any tampering with or borrowing from the creation of others. Anything less is mere imitation or downright theft.

But it is not necessary to keep refurbishing the old creations. There is ever material and combinations for it at our hands without this, if we are good enough to do anything of worth. The hacks keep dinging it into us that there is, and can be, nothing new under the sun. But everything keeps changing continually, as we do ourselves every moment. And the new raw material of our day and our generation lies ever ready if we can see clearly enough to seize it, if we have the knowledge and love of beauty sufficient to fashion it to art, and the strength of personality wherewith to stamp it. The doing of this is called originality.

Making Pictures At Night

By Dr. Herman W. Barr

With Illustrations by the Author

The two pictures accompanying this article are not offered as unusual work or even as the best that could be produced in their line, but I feel that by giving my fellow-workers the data concerning their production I may be helping them to get satisfactory results in like cases. I do not wish to imply that the methods followed are the only ones or that they are even the best, but I feel that by explaining just how they were made I can give others an opportunity of improving thereon or of adapting, to a greater or less extent, the same plan to like subjects.

The first picture represents the front of a florist establishment, and its chief merit lies in the entire absence of the annoying reflections that are so hard to avoid in making pictures that include large plate glass windows. The

negative was made with a 5x7 camera, fitted with an extreme wide angle lens that was stopped down to f-64. The picture was taken at ten thirty P. M., that hour being selected because the strong lights on the opposite side of the street were then extinguished. The negative was made on an Eastman Portrait film with an exposure of thirty minutes. The illumination was produced

THE FLORIST'S SHOP AT NIGHT

by using a five hundred watt nitrogen lamp with a large reflector; this lamp being attached to the necessary length of flexible cord to allow it to be brought around behind the camera. The reason that this lamp produced no reflection of its own image was because it was held directly in front of the open doorway and, of course, any image that the lamp formed on the windows at the sides were reflected still further to the side instead of being reflected back into the lens; the reflection following the rule of all reflections, namely, that of leaving the reflecting surface at the same angle at which they are received.

It is hardly necessary to explain that a show window forms a mirror by reason of the light behind it being much deeper than the light in front and consequently any strong light back of and to one side of the camera would have been reflected into the lens. This is the reason that I waited until the strong light from the opposite side of the street was extinguished, leaving only the light that was used opposite the open doorway to afford the illumination necessary for the picture. The nitrogen lamp and its reflector was turned from side to side during the thirty minutes exposure, using the beam of light much as one would use a paint brush in going over the store front back and forth from top to bottom. A little longer exposure or possibly a little longer

development would have made the result more satisfactory, and possibly a couple of small flashes set off inside the store from behind something that would have prevented the flash itself showing in the picture, would have a much more natural effect by making the interior of the store seem less lacking in illumination.

THE STATE CAPITAL—SALEM, OREGON

The other picture, that of the State Capitol, was taken with a 5x7 camera fitted with a Turner-Reich anastigmat, on a Seed Non-Halation double-coated plate that was developed in Seed's pyro-acetone formula. Just after sun-down an initial exposure of two minutes was given at f-11, and the shutter closed until about an hour later, when the lights were turned on; then an additional two minutes exposure with the same stop was given to secure the lights. It is possible that a slightly shorter daylight exposure and a more prolonged one for the lights might have given a better night effect, but the picture represents very faithfully the scene as it appears on a not too dark evening; but, were the sky darker the outline of the building would be less effective, and were the lights given a longer exposure there would be less natural effect than the one produced, I feel quite sure.

With the electric lights burning, there is considerable detail visible in the scene and my object was to secure as near an approach to this condition as I could. As I have explained, these examples are not put forth as other than suggestions as to a method of procedure under similar conditions, and I trust they will inspire others to make like experiments and give the readers the benefit thereof, as I am doing in this case.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

IMPROVING BROMIDE PRINTS: Just recently I have tried an old wrinkle; the steaming of the surface of my bromide prints. A kettle with a spout from which the steam issues as the water boils, is gotten into operation while the print is pinned to the under side of a board somewhat larger than itself so as to afford a means of holding it without steaming the fingers. Then, as the steam issues forth the print is passed across in such a way that the steam strikes every part in turn just long enough to produce the desired effect, the time being easily determined by an experiment or two. This gives the print a velvety look somewhat like that of a print when wet. It also blends in any pencil work that may have been applied.—T. S. S., Oregon.

INSERTING A SCALE: I recently had a commission to photograph a number of groups of fancy boxes, the customer wanting several sets showing a foot rule as a scale for the sizes and several sets in which the foot rule did not show. It looked as if I would have to make duplicate negatives of each group, an expense which I did not care to incur. As a background of white cloth was used, I first set up a foot rule and photographed it from the same camera distance as that determined upon for the exposures on the boxes. Then, as I photographed each group I included a strip of black card the same size as the ruler, so placing it that only the background was behind it. This gave me a clear glass strip across the negative into which I could easily fit the stripped film negative of the ruler or over which I could paint a little spotting color so that the background printed uniformly white, according to whether or not the footrule was wanted in evidence in the print.—T. C. F., Illinois.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

Vol. XXV San Francisco, California, February, 1918 No. 2

The Dealer's Difficulties

When your dealer offers you something a little different or substitutes another article for the one you ordered, do not think he is doing it because he wants to do other than please you to the utmost. If he could get the goods you want they would be on his shelves to fill your requirements. Possibly his own orders on the manufacturer have been placed weeks or months in advance, and they have not yet arrived; perhaps will not arrive for weeks or months to come. Some manufacturers now require from one to three months in which to fill orders and some of them have orders enough to last for even longer periods. Letters from some of our subscribers indicate that a few unthinking ones are inclined to blame their dealers for not having a full stock of everything they may want. Freight shipments are slow in getting through, express rates are high, and even were the factories able to keep up with their orders, there would be disappointments. Your dealer is doing the best that he can. One that we know has not only placed all his orders months earlier than he would have done under normal conditions, but made them much larger. It has even been suggested that perhaps no small amount of the manufacturers' difficulty is due to this tendency of the dealers to order so much earlier and so much more generously than has been the practice heretofore. So do not blame your dealer for substituting or sending you something different from the exact article ordered. He is not doing it for a little extra profit or to show his disregard for your convenience as you may perhaps unthinkingly suppose.

To Our Dealer Friends

H. W. Boers, in charge of the photographic department of the L. Black Company, Detroit, Michigan, has adopted a plan of increasing the good will of his firm, one that could be followed by any and all photographic dealers throughout the country, to their advantage. It is simply this:

As the unsold copies of photographic magazines on their counter are supplanted by the current issue, they are wrapped up in a neat package and marked "Contents: Photographic Magazines for Those Who Have Cameras. Please Distribute"; and sent to the nearest military camp. Each copy carries a neat little sticker, bearing the name of his firm on the front cover.

Remember, many of the boys in these camps have bought cameras and supplies from your firm, the name and address on the sticker will be a pleasant reminder, and your thoughtfulness in sending the magazines will add to the good impression.

The idea is an excellent one, and I am passing it along in the hope that you will agree with me and see that it is acted upon by your firm. Should you be

returning covers to us for credit, kindly avoid so mutilating the magazine in the future and send us instead a clipping from the upper right hand corner of the contents page. This page corner, beginning with our December issue, will bear a serial number that will identify the issue from which it is clipped without serious mutilation.

With kindest regards,

Most cordially,

EDITOR CAMERA CRAFT.

"The Eyes of The Navy"

From the Navy Department we are advised that the Navy is still in urgent need of binoculars, spy-glasses and telescopes. The use of the submarine has so changed naval warfare that more "eyes" are needed on every ship, in order that a constant and efficient lookout may be maintained. Sextants and chronometers are also urgently required. Heretofore, the United States has been obliged to rely almost entirely upon foreign countries for its supply of such articles. These channels of supply are now closed, and as no stock is on hand in this country to meet the present emergency, it has become necessary to appeal to the patriotism of private owners, to furnish "eyes for the Navy".

Several weeks ago, an appeal was made through the daily press, resulting in the receipt of over three thousand glasses of various kinds, the great majority of which has proven satisfactory for naval use. This number, however, is wholly insufficient, and the Navy needs many thousands more. The Assistant Secretary, therefore, asks us to co-operate with the Navy, by announcing, in addition to the above general statement, the following salient features in connection with the Navy's call:

All articles should be securely tagged, giving the name and address of the donor, and forwarded by mail or express to the Honorable Franklin D. Roosevelt, Assistant Secretary of the Navy, care of Naval Observatory, Washington, D. C., so that they may be acknowledged by him.

Articles not suitable for naval use will be returned to the sender. Those accepted will be keyed, so that the name and address of the donor will be permanently recorded at the Navy Department, and every effort will be made to return them, with added historic interest, at the termination of the war. It is, of course, impossible to guarantee them against damage or loss.

As the Government cannot, under the law, accept services or material without making some payment therefor, one dollar will be paid for each article accepted, which sum will constitute the rental price, or, in the event of loss, the purchase price, of such article.

Decorative art is what may be used in a certain position with propriety; that which is seemly, becoming and fitting. That such work should naturally be pleasing and attractive to the eye, follows almost as a matter of course; but this we see was not the fundamental idea, and no matter how charming a thing may be in itself, if it be not fitted to its position, it is not truly decorative.—F. EDWARD HULME.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D., Burlingame, California

The Construction of Development Time and Temperature Tables

Tables have been published giving the times of development at various temperatures for many brands of plate and many developers, and the method of time development is by now familiar to most photographers. It may happen, however, that the photographer is in the habit of using a developer for which no tables are published, and in this case he may prefer, instead of abandoning the developer with which he is familiar, to work out for himself by experiment the necessary data for constructing his own tables. This was so in the writer's case, and in the hope that it may prove useful to others the method which he adopted is here described and the figures obtained in one particular instance are given in full, in order that the description of the proceedings may be the more easily followed.

The sensitive material employed was the Kodak Speed film, and the M.-Q. developing formula is given below; but, of course, the method is equally applicable to any other developer and brand of plate or film.

Monomet or Scalol.....	10 grains
Hydroquinone	36 grains
Sodium sulphite, anhydrous	131 grains
Sodium carbonate, anhydrous	97 grains
Water to	8 ounces

The working solution was made by taking one part of the above solution and three parts of water. No bromide was used.

The first step is to choose a suitable subject, and, after carefully determining the correct exposure with an actinometer, to make about half a dozen identical exposures in succession. The actual class of subject chosen is immaterial; but, if possible, it should be one with which the photographer is already more or less familiar, and one which contains a fairly large range of tones. The subject actually used in the present case was an interior. It was found afterwards that the contrasts were rather more heavy than was desirable, and an outdoor subject might have been more satisfactory; but it served the purpose, and had the advantage that a comparatively long exposure (twelve seconds) could be given, thus doing away with the uncertainty attending the use of an instantaneous shutter.

The exposures having been made, the roll of film was removed to the dark-room and cut into pieces, in order that each exposure might be developed separately. If plates are used the matter will be simplified, but it must be noted that the test must be made with whatever sensitive material is going to be used in actual work, as the time of development required by two plates of the same speed but of different brands is not necessarily identical.

The first test is most conveniently made at the normal temperature of the room. The developer is diluted to its working strength with water that has been standing in the room for some hours. If water which is employed is used straight as it comes from the tap it will probably be below the temperature of the room, and the temperature will consequently rise during the test, rendering the result unreliable. Another point to be observed is that fresh developer should be used for each exposure.

In the case we are describing, the temperature of the room was fifty-nine degrees Fahrenheit. The first four exposures were accordingly developed at this temperature for five, ten, fifteen and twenty minutes respectively, the time elapsing between the pouring on of the developer and the first appearance of the image being noted in each case, as in factorial development. The time was found in this case to be twenty-five seconds. After fixing, the four negatives were examined and the one which had ten minutes' development was found to be of the desired character. Ten minutes were therefore taken as

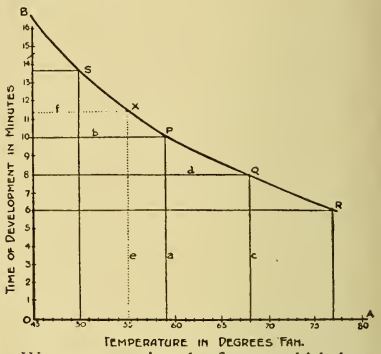
the standard time for development at fifty-nine degrees Fahrenheit. Dividing ten minutes, six hundred seconds, by twenty-five seconds, the "factor" of the developer is obtained; twenty-four in this case.

A fresh dish of developer was next mixed, and heated to sixty-eight degrees Fahrenheit by immersing in a large dish of warm water. In this way it is fairly easy to keep the temperature reasonably constant during the time required for the development of a plate. Another of the exposed plates was then placed in the dish and watched for the first signs of the image. This appeared in twenty seconds, and the correct time of development at this temperature was therefore found by multiplying twenty by twenty-four, giving four hundred and eighty seconds, or eight minutes. On leaving the plate in the dish for this length of time a negative identical with the chosen one was obtained.

The process was then repeated at seventy-seven degrees Fahrenheit, when the image appeared in fifteen seconds, giving the correct time of development as three hundred and sixty seconds or six minutes. After allowing development to continue for this period, a negative was again obtained of the same character as the two preceding ones.

Finally, a similar test was made below the room temperature at fifty degrees Fahrenheit. The developer was cooled by immersing the dish in a larger one containing ice until it reached the desired temperature. The dish was removed from the ice, and the next exposure was dveloped immediately, before the temperature could alter appreciably. As all that is required is the time taken for the appearance of the image, the development need not be completed unless desired, and thus the difficulty of keeping the temperature below that of the room for a long period is avoided. In the present case, the image appeared in thirty-four seconds, which, multiplied by twenty-four, gave eight hundred and sixteen seconds as the total time of development.

Having thus obtained the times of development at four different temperatures, a diagram must be drawn similar to the one shown herewith, in the manner about to be described. On a piece of paper, preferably ruled in squares, two lines OA and OB are drawn at right angles. Along OA are marked off equal distances to represent degrees, and along OB similar marks are made to represent the time of development in minutes. These divisions may be of any convenient size.



We next examine the figures which have been obtained as described above. These are here collected and placed in tabular form for the sake of clearness:

Exposure	Temperature	Appearance	Total Time
No. 1	59°	25 sec.	300 sec.
No. 2	59°	25 sec.	600 sec.
No. 3	59°	25 sec.	900 sec.
No. 4	59°	25 sec.	1200 sec.

No. 2 was taken as correct. This gives us the factor of developer: $600 \div 25 = 24$.

No. 5	68°	20 sec.	$20 \times 24 =$ 8 min.
No. 6	77°	15 sec.	$15 \times 24 =$ 6 min.
No. 7	50°	34 sec.	$34 \times 24 =$13.6 min.

No. 2 is first taken, and through the point on OA corresponding to fifty-nine degrees Fahrenheit, the line *a* is drawn perpendicular to OA. (This is where the advantage of squared paper comes in, as the perpendiculars are then already drawn.) Then through the point corresponding to ten minutes on OB the line *b* is drawn perpendicular to OB. The two lines cut, and give the point P. Proceeding in the same way for No. 5 we draw the two lines *c* and *d*, which fix the point Q. Similarly from No. 6 we get the point R, while No. 7 gives S. Having obtained the four points they are joined by a curve as smooth as possible, in the manner shown in the diagram, and the curve may then be used to ascertain the time of development at any particular temperature in the following way:

Suppose for example, that we require to know the correct time to develop when the temperature of the solution is fifty-five de-

grees Fahrenheit. Through the fifty-five degree division on OA the perpendicular *e* is drawn to cut at X the curve passing through P, Q, and R, as shown by the dotted line in the diagram. From X another perpendicular *f* is drawn to OB, which it is found to cut at the point corresponding to 11.4 minutes, which is therefore the correct time of development at fifty-five degrees Fahrenheit. Of course, if squared paper is used there is no need actually to draw the perpendiculars, and the time may be read off at a glance; indeed, it will probably be found more convenient to refer to the diagram, which may be kept hanging in the darkroom, than to a tabulated list of times and temperatures; but, if desired, a list may be drawn up with the aid of the diagram showing the times of development at two or three degree intervals.

If the times of development are required at temperatures below the point represented by S, in this case fifty degrees Fahrenheit, the curve may be continued past S as shown, the necessary curvature being judged by eye. The curve must not be carried too far in this way, but it is unlikely that development will ever be carried out at temperatures much outside the limits shown in the figure. —L. W. Codd in *Photography*.

A Simple and Effective Method of Mounting

Even in England it is not every amateur who can be the owner of a dry mounting machine or of an ordinary copying press, while on service in India, where I am never more than a few months in the same place, the trouble and expense of carrying about an elaborate outfit for mounting prints so that they are, and remain, quite flat, is out of the question. I do not claim for the method which I am going to describe that, in its entirety, it is original, but the details of it have been worked out by myself, and I have not seen it or any similar system advocated in print.

It is claimed for it that it requires no practice, and only such neatness as any average man possesses; that, given this neatness, prints of any size can be mounted from the very start, which will be perfectly flat, and will not show the slightest blemish attributable to the mounting process, such as corners unstuck or curling up, hairs on print or mount, patches of mountant on the print, etc.; and also that no apparatus whatever is required beyond the simplest articles, which can be obtained anywhere, this latter consideration in my case being the most important of all.

The first thing to be done is to decide what is the largest size of mount on which a print is ever likely to be required, and then to obtain several pieces of thick cardboard, say three inches larger each way than this mount. In my own case, I keep four pieces 25x30, and one-fourth inch thick, and about six pieces the same size, but about one-quarter the thickness. Several pieces of the best and thickest white blotting paper must also be got; attempting to make shift with thin, cheap blotting paper is only poor economy. The number of cards and blotting papers necessary will depend on how many prints are to be mounted at a time. For each print, one piece of thick and one of thin card, two full-sized and three or four smaller pieces of blotting paper, should be provided.

For pressing the mounted prints, a piece of board is required, a few inches larger each way than the largest mount likely to be used. This board is the only article likely to cost anything appreciable. It ought to be one inch thick, well made and strong, in size, say, 27x32. One side must be smoothed off and quite flat. In my case, I have three strips of wood on the back of the board, at equal intervals, to prevent warping, and to enable the board to stand any weight likely to be placed on it without bending.

The mountant is made by taking an ounce of gelatine—practically any kind will do, and allowing it to swell in the smallest quantity of water required to convert it into a soft spongy mass. Possibly different kinds of gelatine would behave differently; so that it would perhaps be well to experiment once or twice with a sample of the gelatine available, and under the conditions of temperature obtaining, the aim being that the mountant should be of such a consistency as to be just spreadable—if I may use the word—with a stiff mounting brush.

To return to the preparation of the mountant. The gelatine may be left to swell for about half an hour more or less, and then gently heated, taking care that it does not get too hot locally. To prevent this, it should be stirred with a strip of glass until quite liquid, and then an ounce and a quarter of

methylated spirit must be added slowly with constant stirring. When this is stirred in, a quarter of an ounce of glycerine is mixed with it, and the mountant is ready for use. In my own case, in India, I find it remains in a liquid state without further heating, and is at all times available for use at once. Under the different conditions obtaining at home, it may have to be heated before use, though this is rather an advantage than otherwise, as the heating can be regulated so as to reduce the mountant to just that state of fluidity which experience shows to be the best.

To mount a print a piece of the thick cardboard is placed on the table; on this again is put a piece of blotting paper on which is the dry untrimmed print face downwards. For applying the mountant a special mounting brush, flat with stiff bristles which do not come out, and about an inch wide, should be used, and not a flimsy round paste brush.

There is a right and a wrong way in spreading the mountant. It must not be poured in a pool on the center of the print, and then spread out towards the edges, or the print will shift about and, sooner or later, mountant will reach the face via the blotting paper. Instead, the brush is filled with a generous quantity of the mountant, and starting at, say, the left-hand top corner of the print the brush is drawn along parallel to the edge, and at about a quarter of an inch from it, depositing mountant on its way until it reaches the top right-hand corner. During this operation the print is held steady by the pressure of the left hand on the center. After a little practice, a thick, perfectly even, deposit of mountant can be obtained, which will become too stiff to work in about two minutes. This is the ideal to be attained when considering at what temperature the mountant is to be used. The next edge is then worked on in the same way, spreading the mountant quite thickly; and, after it has remained a minute or two, it can be evened up by drawing the brush across it towards the center of the print. After all four sides have been covered in this way, the brush (well charged with mountant) is worked inwards, still maintaining the pressure of the left hand on the dry spot left in the center, and, when all has been worked smooth, this spot can also be filled up. One need not be alarmed if the coating at this stage refuses to become smooth. The gelatine has been swollen to its full extent, so that it will contract, becoming thinner and smoother on drying.

The print can then be laid aside to dry in a place free from dust. Of course, the distance at which the mountant is kept from the edge of the print depends on how much is to be trimmed off. I have named a quarter of an inch as the minimum distance for the beginner to use with the certainty that no mountant will get on to the face of the print. It is important that a thin line of mountant should be removed in the trimming, so that one may be quite sure that the dry mountant reaches right up to the edge.

There is no particular time for the prints to be left to dry. No attempt should be made to trim them till they are absolutely dry, when they should be almost flat with a smooth, even layer of mountant on them.

The mounting is done on a stout table. On this a piece of thick card is placed, and on this again a large thick towel. The trimmed print and two or three pieces of blotting paper, slightly larger all round than the print should be handy, also an ordinary flat iron (to be used cold only). Selecting a flat space on the floor, a piece of thick cardboard is put on it, and on that a piece of blotting paper, larger all round than the mount on which the print is to be mounted—this is merely to protect the cardboard from damp, which would eventually spoil it.

A mount is soaked in water until the surface on which the print will rest is uniformly wet, and, placing this face upwards on the towel, the print is brought down on the damped mount, placing it straightaway in its correct position, since it adheres the moment it touches the damp mount. If it were then to be shifted, traces of gelatine would be left on the mount. A word of caution must be given against allowing the least trace of gelatine to remain on the print or on the mount, except where it is covered by the print. Apart from the fact that it is sure to show in the finished picture, damp blotting paper is in intimate contact with the print and mount for a long time during the subsequent process of pressing, and, when dry, would be found to have stuck hard to either or both.

No difficulty need be anticipated in centering the print if plain thin card or art paper mounts are used, as they may be slightly

larger than required in the finished picture, and then trimmed afterwards to fit the print. The system is equally applicable to any kind of mount, from the thinnest paper to thick card.

When the print is placed on a damp mount, a piece of blotting paper is put over it, and pressed firmly into contact with the mount by means of the iron. It is well not to press too heavily at first, as the print, not being in true contact all over, may slip, and leave gelatine on the mount; but when once the print is adhering well all over, considerable pressure should be used, especially at the edges and corners, taking care, of course, not to force the pointed end of the iron through the blotting paper. As the blotting paper gets damp it should be replaced by a dry piece, as it is difficult to move the iron over the damp surface while still maintaining the pressure. The print must not be left lying on the damp mount longer than can be avoided before pressing it into contact, as the damp expands the gelatine, causing the print to curl away from the mount and making perfect adhesion more difficult. Finally, the edges must be examined to ensure that they are in absolute contact, and print and mount should then be limp and quite flat.

The mounted picture is place face upwards on the blotting paper, which in turn is put on the thick card on the floor, the other piece of blotting paper is placed over the picture, a thick card over that, and lastly the flat board. On this is placed a heavy weight, and the whole left till quite dry.

Several prints can be handled at one time, provided that for each print we have a thick card to distribute the weight, and two full-sized pieces of blotting paper to isolate the damp picture from the cards above and below it. Neither cards nor blotting paper should be stinted. Both should be larger each way than the mount, otherwise the pressure will leave lines on the mount. For the same reason the board should be larger than the largest mount likely to be wanted.

To separate a print from its mount, all that has to be done is to place both in water till the gelatine is soft, allowing plenty of time for this or the print may be spoilt. After some time in water, the print and mount will be found to part so easily that there is no danger of injuring either.

The method applies equally well to multiple mounting. I have mounted prints on three separate mounts with perfectly satisfactory results, though, personally, I do not think the appearance of the finished picture warrants the extra trouble involved—Major P. Temple in *Photography*.

Copying By Magnesium

With many photographers it must be a common experience to have to copy photographic prints for one purpose or another. In doing so it is frequently found very difficult to get a result in which the grain of the paper of the original print is invisible, especially if this paper be slightly rough.

The prominence of the grain is dependent entirely on the way in which the print is lighted, for irregularities on the surface of the paper are only seen when they catch the light or cast a shadow. In order to avoid this it is clearly necessary either to illuminate the print perfectly evenly from all directions, or to arrange the source of light in exactly the position occupied by the lens of the camera, so that only the illuminated parts of the paper are to be seen by the lens. This latter alternative is, of course, quite out of the question, and therefore we have to rely on obtaining an illumination which shall be as even as may be.

It is quite possible to use daylight for the purpose, but it then becomes necessary to do the work out of doors, for the limited area of the ordinary window precludes a uniform lighting of the print, even when reflectors are called into requisition.

Artificial light, by reason of the ease with which it can be controlled, is easier to use, and gives more certain results; moreover, exposures can be standardized to a great extent without difficulty. Of artificial illuminants magnesium ribbon takes the first place, on the score of both efficiency and convenience.

To produce even illumination of a flat surface I have found it best to divide the ribbon necessary for the exposure into three pieces, which are then burnt in succession, one above the camera, one to the left of it, and one to the right. They are burnt in the same vertical plane as that in which the back of the camera lies, and at a distance of about one foot from it. To produce the effect of a fourth piece burnt *below* the camera, a piece of white paper is placed on

the table, and its reflecting effect during the burning of the three strips of ribbon produces a result comparable with that obtained by means of a fourth strip of magnesium. Thus the effect is obtained of equal amounts of light from points a little above, below, and to each side of the line joining the lens of the camera to the centers of the print and of the sensitive plate, giving a combined result much like illumination from the lens itself.

To descend to practical detail, it may be well to mention at once that a tripod is by no means an ideal stand for the camera when copying, for, as the greatest care is necessary to get the camera level and square with the print, there are continual small adjustments to be made, each of which, with a tripod, involves releveling the camera, and in doing this it is very easy to upset the distance from lens to print.

It is best, therefore, if much copying is to be done, to make a small stand to which the camera may be screwed as to a tripod. All that is necessary is a stout piece of wood, with three strong legs screwed on to it, and with a hole to take a tripod screw. I will not go into details, for carpenters will be able to do the work without them, and those who are not wood-workers will not undertake the task.

To support the print I have found nothing better than an enlarging easel of the ordinary type.

Focusing may be done with the aid of any bright light—an acetylene cycle lamp is particularly suitable. As it is not easy to tell when the image on the screen is precisely at its sharpest, it is best to stop down after focusing to about f-16, thus making certain that the maximum degree of sharpness has been attained. The lamp is then turned away from the print to be copied, and the magnesium ribbon is ignited, the pieces being held in the positons mentioned. The ribbon cannot be held in the fingers while burnt, and it is best supported in one of the commercial "flashmeters", or failing this, in pincers, or between a couple of coins.

The most convenient place to hold the ribbon is at the same distance from the easel on which the print is placed as the back of the camera, and about one foot away from it in a vertical or horizontal direction, and it is on this assumption that the following exposure table has been based.

	1/4	1/3	1/2	3/4	1	1 1/2	2	2 1/2
3	**2.2**	**1.8**	**1.6**	**1.8**	**2.3**	**3.9**	1.6	2.6
3 1/2	**3.0**	**2.5**	**2.2**	**2.5**	**3.1**	**5.2**	2.2	3.6
4	**3.9**	**3.2**	**2.8**	**3.2**	**4.0**	1.7	2.9	4.7
4 1/2	**4.8**	**4.0**	**3.6**	**4.0**	**5.2**	2.2	3.7	6.2
5	1.5	**5.2**	**4.4**	**5.2**	1.6	2.7	4.6	*1.8*
5 1/2	1.8	1.5	**5.6**	1.5	2.0	3.3	5.5	*2.2*
6	2.2	1.8	1.6	1.8	2.3	3.9	*1.7*	*2.7*
6 1/2	2.6	2.1	1.9	2.1	2.7	4.6	*1.9*	*3.1*
7	3.0	2.5	2.2	2.5	3.1	5.3	*2.3*	*3.6*
7 1/2	3.4	2.8	2.5	2.9	3.6	6.1	*2.6*	*4.1*
8	3.9	3.2	2.9	3.3	4.1	*1.8*	*2.9*	*4.7*

It is assumed also that the plate is of "Rapid" of a speed of about 80 H. & D., and the stop to be used is f-16, except where the figures are printed in heavy or in italic type. Where heavy type is used the stop must be f-32, and where italics are used it must be f-8. The figures and fractions at the head of the columns represent the magnification, or the linear ratio of the sizes of the image and object, while the first or left hand column gives the focal length for all lenses between three and eight inches focus. The quantity of ribbon indicated must be burnt in each of the three positions; the total length required for an exposure is thus three times that given in the table.

It may strike some readers as peculiar that Special Rapid plates have been recommended in preference to those specially prepared for copying. The reason for this is concerned with the development of the exposed plate.

Most photographers nowadays use some system of time development, and the development time for copies is from fifty to seventy-five per cent longer than for ordinary landscapes. To use this information it is necessary to know how long to develop a landscape negative on the plates used for copying, and therefore the use of the plates with which the operator is familiar is to be recommended. Only where much copying is to be done is it advisable to launch out into a new brand of plates whose development speed is an unknown quantity.

In conclusion, it should be pointed out that the ability to copy successfully any photograph on reasonably smooth paper puts a very great power in the hands of the pictorial photographer, who is thus enabled to work up a print as may be desired, and then copy it, so that as many reproductions of it as necessary may be prepared, and at the same time these prints, though greatly modified, show no sign of hand work, for the whole of the final image is photographic.—L. Sowerby in *Amateur Photographer.*

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Some Pinhole Pictures

Out in the country on a little trip, one friend I visited insisted on my going over to a neighbor's ranch to see some pictures a man had made while working there about a year ago. The remarkable thing about these pictures was that they had been made without a lens and without a camera, except as a wooden box pasted all over with black paper could be called one; and, more surprising still, no plates or films had been used. I simply had to go and see these pictures; and, they were found to be surprisingly good. I not only saw them, and admired them greatly, but I saw the box covered with black paper that had been used in their production. One end carried a pinhole lens very carefully made out of a piece of copper that had been pounded down to paper thickness, perforated, and placed over an auger hole about an inch in diameter. The other end carried a tight fitting lid to the inside of which could be attached an 8x10 piece of bromide paper by means of two strips of wood that fitted tightly along the two long sides. All this improvised photographic apparatus required was that it be taken into a dark room, or an ordinary room at night, a piece of bromide paper inserted and wedged into place in the lid, the pin hole covered, and it was ready to place on a box or other support in order to make the desired exposure the next day. By simply removing the bit of black paper that served as a cap over the pin hole for a long enough period, the production of a good paper negative was achieved. Looking it up I find that a pin hole, one fortieth of an inch in diameter, which is about the size of the one on the box, at a distance of ten inches from the plate,—about the distance from the front to the back of the box, calls for an exposure of about a minute on a fast plate under favorable light conditions. Bromide paper being at least ten times slower, I should think an exposure of about a quarter of an hour would result in a very good paper negative. At least, that is what I would start experimenting with. The pictures I saw represented a wide range of views about the home. With the long exposures it was not necessary to keep everybody out of the view, in fact, I was told that the members of the family were allowed to go in and out of the house or pass before the camera, while the exposures were being made. Some of the pictures taken late in the afternoon when the exposures were even longer, had a particular charm in the softening of the edges of the shadows due to their shifting during the time. One picture in particular, a night scene, was most interesting, evidently made by starting the exposure a little before dark and ending it some time the next morning. I did not succeed in finding any of the paper negative, but would judge from the simple way in which all other work was carried out that the photographer did not even bother to wax or otherwise treat them before using them to make the prints. Aside from the few packages of bromide paper, about all the cash outlay required was the price of an ounce can of pyro, a pound of sulphite of soda and some hypo; the household keg of washing soda supplying the alkali used. This I "Shirlocked" from an examination of the material left behind and the warm tone of the image on the prints.

Consider the Shadows

Even those who use an exposure meter can easily go astray in their exposures if due attention is not paid to the preponderance or otherwise of the shadows in the subject before the camera. For example, one may be photographing a large white building from such a distance that the plate is nearly filled. From one position the side most fully presented is in bright sunlight, while from the other the shaded side predominates with only a little of the sun lighted side showing. While both answer to the descrip-

tion of a near, light colored object, without dark foreground, it is obvious that one view will require about double the exposure that the other demands. This tendency to disregard the shadows, shown by even experienced workers, was recently impressed upon my mind while out with three other camera users in search of landscapes. We came upon a stream at a point where a sharp bend gave a good standpoint for pictures, both upstream and down. The view upstream was well lighted, in fact, too much so because the sun was directly behind the camera when the latter was pointed at the scene. Downstream, at an angle to the other view, one bank of the stream was in deep shadow that in some places reached across to the other side. Two of the party estimated the exposure for the first view with their exposure meters, agreed to split the slight difference in results, and made their exposures. Swinging their cameras around for the second view they both agreed that the exposure must be the same, it was the same light conditions, the same stream, the same wooded banks. The third man of the party suggested that consideration be given the increased mass of shadow presented by the scene being "crossways" instead of "with" the sun, as he expressed it, and the result was that they decided to give more than double the exposure given the first view.

The Angle of a Lens

These "Tables of View Angles" that are published in many of the books are somewhat puzzling to the worker who wishes to know what angle his lens covers. One table will advise to "divide the base of the plate", another says the "long side of the plate", and a third will advise using the "diagonal of the plate". It all depends on what one wishes to find out. If one wants the angle cut by the lens he should take the diameter of the circle of illumination of the lens; which, if the lens is being used on the largest sized plate it will cover, is about the same as the diagonal of the plate. But, if one wants the angle of the view, the only proper basis is the base of that particular picture, regardless of whether the base of the picture is the long side of the plate or the short side. It is quite plain that a landscape taken with the plate horizontal will include a wider angle than if the plate was turned to the perpendicular position, yet the advocate of figuring the angle on the "long side of the plate" would say that both pictures were the same "view angle". Taking one of these "Tables of View Angles", the diagonal of the plate used, if the lens just covers the plate, will give the angle the lens cuts; but, while the lens may be a wide angle one, the angle of any particular view photographed with that lens will depend upon the base line of that view.

Waxing Wooded Dishes

A Kentucky correspondent has been trying to give some trays, home-made ones, a coating of parafine wax, and is not pleased with the result of his efforts. Putting it on with a hot iron is not such a simple matter as the average instructions seem to indicate by the briefness employed. To start with, the trays are best made out of a good quality of even grained pine or spruce, cypress being also quite satisfactory. The inside, the part to be coated, should be sand-papered quite smooth and to a uniform surface. Then, while the tray is being made thoroughly warm or to just a little short of the scorching point, using an ordinary kitchen oven, the wax should be melted and heated in a water bath on top of the fire. Then, with both the tray and the wax as hot as can be conveniently handled, apply the coating with a brush that is not too stiff, and apply it as evenly as possible, working in a warm atmosphere. Allow the fire to go out and then place the tray back in the oven so that the wood will absorb more of the wax than it otherwise would, leaving it there until the next morning. With a little practice one will be able to do a most workmanlike job, and a tray such as is indicated, well coated with parafine wax, is really a most delightful one to use. Besides, particularly in the large sizes, one makes an enormous saving in expense.

Illinois College of Photography

A number of former students have written for recommendations for the photographic department of the Army.

Mr. Voskanian has completed his photographic course, and returned to his home in Persia where he will open a studio.

Moody Dawson of Houston, Texas, class of 1907, is First Lieutenant in the Aviation Corps, securing his commission on his I. C. P. diploma.

THE CAMERAMAN'S PAGE

Edited by Hal G. Hall

A Practical Department of Comment on Methods and Apparatus

The Mechanics of Film Splicing

The following extract from the projection department of MOTION PICTURE NEWS covers a phase of cine work that is often given too little attention by both cameramen and laboratory workers. In addition to the practical reasons of the projection room operator, given herewith, there are at least two additional and just as practical reasons for the use of the same type of splice in laboratory work:

"It is well known that a large percentage of the operator's troubles are due to the bad condition of film, and it is also an established fact that a new film deteriorates rapidly with use. Mishandling; worn or incorrectly adjusted projector mechanism; and a variety of other causes contribute to this rapid deterioration of a film positive, but it can be emphasized that a film positive, carefully prepared in the laboratory, and used by a competent operator on a clean and accurately adjusted projecting machine, may be screened thousands of times without showing any appreciable effects from such use. This is not an imaginative statement formulated as an introduction for that which follows, but is founded on the study of the condition and characteristics of many reels of film which have undergone long and continuous use under our personal observation.

"The proper care of motion picture positive prints is a subject of itself, but we propose on the present occasion to record some observations on the important item of the splices by which lengths of cine film are joined together. Film splices are termed 'patches' by the average operator, but this term is rather a misnomer, and is discouraged by makers of cinemachinery, while the term 'patch' is rarely heard in a film laboratory.

"Modern positive printing methods have made possible the preparation of a thousand-foot reel of film with as few as five or six splices for a straight black and white subject, but in the case of a film containing frequently alternating scenes of different tints, a reel as issued by the laboratory may contain a great many 'joins'. Although a new film positive is supposed to be in perfect condition, it is a fact that there is much careless joining done in cinematographic laboratories, and it seems that every film joiner or 'splicer' in a laboratory has his, or her, own special method of making a splice. The technique of splicing, such as the scraping of the emulsion from the film, application of the cement, etc., need not be considered here. One point should be established, however, before we proceed further; it is not possible to make a perfect, or even a highly serviceable, splice in cine film without the aid of a splicing machine, so called, or press wherewith to force the cemented edges of the film into complete contact at the point where the join is made. In that which follows the use of a press of some sort is assumed, since it is indispensible to the production of first class results.

"There are a variety of methods of cutting and overlapping the ends of two pieces of cine film in order to make a join, but they are all derived from two distinct and extensively used types of film splice. As no good could come from the description of numerous impractical types of join, we shall therefore consider only the two principal forms, and it will presently be apparent that one of these types of join is so vastly superior to the other that there is, in fact, only one type of film splice which is worthy of consideration and use by the laboratory and the conscientious operator.

"In Figure 1 is shown a type of film join which is in extensive use. As Figure 1 shows, this style of splice is made by cutting the two ends of the film to be joined right through the middle of the space between two consecutive pairs of sprocket holes. The section A of the film then has the emulsion scraped away to the center of the space between the

two pairs of sprocket holes nearest the end. The end of film B is then laid over it; the sprocket holes registered; and the join made.

"In spite of the fact that this type of splice is in extensive use it can be stated that a large percentage of cases of losing the loop,

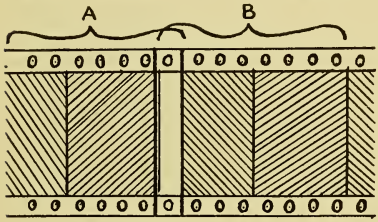


Fig. 1.

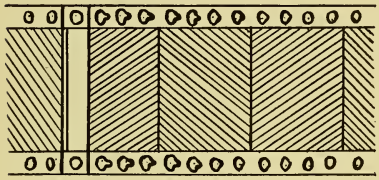


Fig. 2.

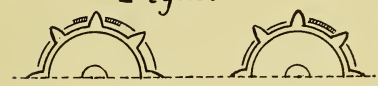


Fig. 3. Fig. 5..

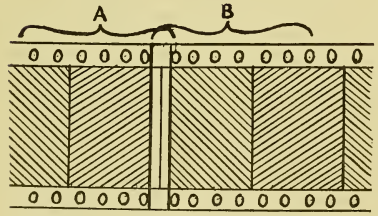


Fig. 4.

film riding the sprocket, and other accidents while the film is passing through the projector are due to this unscientific type of film splice. A splice of this type also makes more noise when passing over the intermittent sprocket than most other forms of film splice, and while it might be thought that this is an inconsequential item, the fact that such splices make a lot of noise in traversing the intermittent is an indication of itself that they are not passing through in a frictionless and unimpeded manner. The result of this is severe wear on the film, and the rapid breaking down of the sprocket holes following a join of the type in question.

"The appearance of these broken sprocket holes is shown in Figure 2, which is based on the study of films, otherwise in perfect condition, which have been repeatedly projected on a machine which was in first class adjustment. Figure 2 refers to the effect of a splice such as is depicted in Figure 1 on the pairs of sprocket holes following the splice. Needless to say, this breaking down of the sprocket holes, when once started, spreads rapidly along the film. The reason for this will be presently explained, but a further study of Figure 1 will make it plainly apparent that to make a join which encircles the sprocket hole is to join the film at its weakest point.

"Let us, however, see why it is that the form of join illustrated by Figure 1 is handled so roughly in its passage through the projector mechanism. The reason is really a simple case of mechanical misfit, as is made evident by Figure 3. In Figure 3 is shown a section of a projector sprocket. A join of the type represented in Figure 1 is shown passing over the sprocket teeth. When we consider that a film splice represents approximately double the ordinary film thickness, and that all film splices are relatively unpliable, it is at once apparent from Figure 3 that such a splice as we are now considering can easily ride the sprocket teeth, and also that the strain on the edges of the sprocket hole which forms the center of such a join must be very great. It is readily apparent therefore why this type of splice deteriorates so rapidly and is the cause of much trouble. In passing over the sprocket teeth it is situated at the most unfavorable point possible.

"We have now to consider the means of improving this unfeasible method of joining cine films. This is accomplished by making splices of the type shown by Figure 4. In addition to being the most serviceable of all splices in practical use, it is very easy to remember the correct method of making this type of join correctly. Figure 4 shows that the two films to be joined are so cut as to leave on the end of each strip one com-

plete space such as separates successive pairs of perforations. There should be no excess portions of the next pair of perforations, such as is caused by cutting the film across a pair of perforations. When the films have been correctly cut, so that the end of each strip represents a space of the width which separates successive pairs of perforations, the end of film A, Figure 4, has the emulsion scraped away to the extent of one space; —between perforations. The end of film B, Figure 4, is laid on the scraped surface just so as to cover it, to the extent of one space; and the join made.

"Now we have a splice as nearly perfect in mechanical design as it is possible to make in a conventional cine-film, for use with the present style of projector. A splice of the type shown by Figure 4 will pass through a projecting machine with less resistance or strain than will any other form of join; with the result that reels of film having all of their splices made in this manner will give less trouble to the operator than will films joined with any other type of splice. This statement, it is understood, assumes the use of a correctly adjusted projector, for with a badly adjusted machine any quality of film will speedily come to grief. Even so, the style of join depicted by Figure 4 will fare better than other styles, because, as previously noted, its design permits its free passage through the projector mechanism.

"We see this illustrated by Figure 5, which shows a section of a projector sprocket and a join, as illustrated at Figure 4, traversing the sprocket. This type of splice, it will be recalled, occupies the space between two successive pairs of perforations on a film, and therefore when such a splice passes over a projector sprocket it lies in the depression between successive pairs of sprocket teeth as Figure 5 shows. It is evident from Figure 5 that this type of patch occupies the position of least strain in passing over a projector sprocket, and also that the sprocket holes at either side of the patch are more securely engaged by the sprocket teeth, than could possibly be the case with a splice of the type illustrated in Figure 1.

"In view of these graphical illustrations it will be readily appreciated that films containing splices made as per Figure 4 will give the most satisfactory service, and will also be subject to less breaking down of the sprocket holes following the joins than is the case with films spliced in any other manner. With a properly adjusted projection machine there is in fact no breaking down whatever of the sprocket holes following splices of type Figure 4, and we recommend the adoption of this form of patch by all laboratories and projecting machine operators."

In addition to the above reasons for the preference of the splice shown in Figure 4 over that shown in Figure 1, are the following considerations that recommend the former to the laboratory worker: The film can be more easily scraped entirely free from emulsion, before applying cement, along the smooth strip between perforations than across perforations. When scraping hastily, preparatory to splicing, there is less danger of tearing out perforations or injuring the edge of the scraped end of film; and of course, as the greatest strain comes on the perforations, it is most essential that the union be perfect at the edges of the film. A narrow strip of spliced area at top and bottom of two pictures is less liable to be noticeable on the screen than a wider strip at the top of one picture. Cement is less liable to partially fill up perforations at splice; thus negative is less liable to give trouble in printer. By making splice on strip between perforations, there is a maximum of cemented area in line of sprockets' pull, with a minimum of overlapping film to become stiffened by poor cement. Needless to say, big and stiff splices are a frequent cause of film breakage adjacent to splices.

In conclusion: Although the film can be cut exactly on straight edges of perforations, the cutting is more readily done by just avoiding the perforations with the scissors, leaving the perforations intact, thus avoiding possible ragged ends due to cutting into perforations.

Direct Vision Camera

There will very soon be placed on the market a camera that shows the exact picture that will appear in the film negative. By an ingenious arrangement of a prism and suitable auxiliary lenses, the "finder" image is magnified and thrown, by the same lens that is used in making the picture, right side up, onto a groundglass, which last can be marked and kept for reference for double exposure work.

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4439—Harry C. Wiggin, 54 Marlboro St., Newton, Mass.
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4441—C. Erwin Ayers, 6 Sabin St., Montpelier, Vt.
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2¼x4¼, developing paper, of farm and street scenes, live stock and general views; for gulf coast views. Post cards or same size prints. Class 1.

4443—Mrs. Chas. Bundy, Tacoma, Ohio.
3¼x4¼ to 5x7, developing paper, of nature and farm scenes; for mountain, river, ocean and landscapes, prints or stereos. Class 1.

4444—Alvin W. Ruck, 30 Columbia St., Cedarburg, Wis.
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4445—Rolland D. Wolff, 1222 Olive St., Kansas City, Mo.
Class 2.

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Class 2.

4447—G. W. Grant, 1435 39th Avenue, Oakland, Cal.
Class 2.

4448—J. L. Farquhar, 245 16th Avenue, Homestead, Pa.
4x5, developing paper, of views of general interest; for anything worth while. Post cards only at present. Class 1.

4449—John Henry, Box 245, Dilworth, Okla.
Class 2.

RENEWALS

744—Frank L. Church, 550 Maple Ave., Herkimer, N. Y.
4x5, developing paper, of general views; for historical and foreign views, studies, etc., of natives of Africa, Philippine Islands, etc.; also war views. Class 1.

2565—E. V. Bargamin, Elk City, Idaho.
Class 2.

2739—A. Ray Welker, 308 N. 5th St., Marshalltown, Iowa.
Class 2.

3255—Dr. A. M. Sutton, 175 South First St., San Jose, Cal.
3¼x4¼ to 6½x8½, developing and bromide papers, of mountain, woodland and seashore landscape; for any good work. Wish to hear from Oregon or Washington members who would join a good circle. Class 1.

3541—B. F. Smith, Tygh Valley, Oregon.
3¼x5½, developing papers, of mountain scenery (showing lakes, waterfalls, snow-capped peaks), landscapes and miscellaneous views; for mountain scenes, bathing girls, and figure studies. Class 1.

4009—H. J. Gergen, Escondido, Cal.
3¼x4¼ and 3¼x5½, developing papers and post cards, of locomotives and general views in California, Colorado, Arizona, New York and other States; for the same. Class 1.

4036—H. R. Wall, P. O. Box 171, Sonora, Tuolumne County, Cal.
Any size up to and including 6½x8½, various papers, of artistic figure studies from original negatives, Yosemite Valley views, views taken in the high Sierras showing rivers, lakes and the snow-capped peaks, also studio portraits and home portraits; for artistic figure studies from original negatives (no copies accepted no matter how good the work may be), also studio and home portraits of pretty girls (low bust pictures preferred) and original bathing girl pictures or groups taken on the beach. All exchanges of the foregoing subjects promptly answered with like number of prints. Class 1.

4043—C. H. Helmbrecht, Turtle Lake, No. Dak.
3¼x5½, post cards and prints, developing paper, of views and home portraits; for the same. Class 1.

4172—J. C. Flint, 687 61st St., Oakland, Cal.
3¼x4¼, 3¼x5½, and 4x5, developing paper, of architecture, miscellaneous California and Panama Pacific International Exposition views; for miscellaneous wood, marine, mountain and historical buildings, no flowers or genre. Good work only sent or accepted. Class 1.

4297—Robert P. Dexter, Coudersport, Pa.
3¼x5½, 5x7 and smaller, various papers, of miscellaneous subjects; for the same.
Class 1.

4307—V. N. Swinnerton, 2557 Hartman Ave., Omaha, Nebr.
Class 2.

4313—M. W. Howard, 1917 Woolsey St., Berkeley, Cal.
3¼x4¼ to 6½x8½, various papers, of landscapes and tree studies; for the same.
Class 1.

4330—O. L. Wahlgren, Route 9, Box 36, Fergus Falls, Minn.
3¼x5½ and masked smaller sizes, also enlargements to 8x10, various papers, of Minnesota scenery, moonlight views, snow scenes, views on water, home portraits and miscellaneous subjects; for pretty scenery and interesting subjects. Good work sent and desired. Wish correspondence with exchange. Would like to hear from some one who has sold pictures to calendar firms and the like. Class 1.

4342—H. S. Albertson, R. F. D. No. 1, Box 43, Omak, Wash.
Post cards, various papers, of general views; for the same. Class 1.

CHANGES OF ADDRESS

1980—Ansel Kisner, 306 Blaine St., Fairmont, W. Va.
(Was General Delivery.)

4269—W. A. Gillespie, Stamps, Ark.
(Erroneously printed in our January issue as Stamps, Ariz.)

4416—R. C. Posey, Box No. 70, Tuscumbia, Ala.
(Was Gadsden, Ala.)

CLUB NEWS AND NOTES

Club Secretaries and others will oblige by sending us reports for this Department

The Portland, Maine, Exhibition

The photographic section of the Portland Society of Arts will hold its annual exhibition from March first to April first, 1918. All entries should be addressed to the Portland Camera Club, Portland Society of Art, Portland, Maine, and reach there not later than February twenty-second. All pictures should be framed and can be with or without glass at the option of the exhibitor. Record blanks and further information may be obtained from F. O. Libby, Secretary, Portland Society of Art, corner Spring and High Streets, Portland, Maine.

Chicago Camera Club

The regular monthly program of this enterprising club has just reached us and it indicates a most interesting evening for each Wednesday of the month. The first, or ladies' night, is devoted to an illustrated lecture by Dr. Moffatt; the next to a discussion of members' prints and slides and the showing of Mr. Sturtz's collection; the third to a demonstration of lighting the head, and the last to a business and social meeting that will involve a discussion of prints from negatives made by members the previous week and the showing of a collection of stereoscopic views by Mr. Tuckerman. In addition there are four exhibitions of a week's duration each, of the work of Messrs. Goble, Nelson, Wensell and Bahl, in turn.

California Camera Club

The California Camera Club of San Francisco has decided on a drive to increase its membership; and, in order to achieve this end, it will, for a limited period, waive the usual initiation fee of ten dollars. The monthly dues are one dollar and fifty cents, and under this temporary waiving of the initiation fee, two quarters' dues are to be paid by new members when joining. The club's new quarters on the sixth floor of the Commercial Building, 833 Market Street, offer improved and increased facilities for photographic work in all its branches. Here are held frequent demonstrations for photographic processes, print exhibits and the social functions its spacious rooms make possible, and here will be found an extensive photographic library and current American and foreign photographic magazines. In addition, regular monthly illustrated lectures are given at a large hall, each active member receives eight tickets therefor. The work rooms are completely equipped, and include a large, well lighted studio. Outings are frequently held, and these offer excellent means whereby the beginner can improve his skill in pictorial photography. Those who have been contemplating joining this old established photographic club should at once apply at the rooms or inquire of a member concerning this opportunity.

OUR BOOK SHELVES

"Nature Lovers' Poems"

As Bryant tells us:
"To him who in the love of nature
Holds communion with her visible forms,
She speaks a various language."
So the author gives us, in these poems, an interpretation of the various moods of nature, of the great outdoors that we all find so sympathetic and inspiring. The sixty-two poems are sure to please the genuine nature lover and as a gift the book makes a strong appeal. Some eight or ten handsome illustrations add to the value of the book which we are advised can be obtained directly from the author, Amos K. Mehl, 440 Old Fort Place, Fort Wayne, Indiana. Price one dollar and fifty cents, net.

"The 'Wellcome' Photographic Exposure Record and Diary, 1918"

A feature which will at once appeal to the purchaser of the new edition of this popular annual, is the fine genre study taken "In the Pushcart Market" by the well known New York photographer, A. E. Churchill. The other illustration shows how pictorial even war may be when it is photographed by an expert. It is entitled "Out of a Cloud of Dust into a Cloud of Bullets", and it is a record of an incident on the Belgian front from the camera of W. Gore. The negatives of both subjects were developed with "Tabloid" "Rytol", a British product supplanting German made developers. As for the book itself, it is wonderful, how its good features are maintained. This is largely due to the fact that the main article has been entirely rewritten, and under the title of "Photography Simplified" we have the whole art of successful photographic practice, except exposure, which is dealt with in a separate article, made as clear as A, B, C, in about fifty pages. The instructions given are so definite that no one can mistake them, and if they are followed no one can fail to obtain successful results. Ready reference tables for development, printing, enlarging, focusing, etc., form a leading feature in this compendium of photographic information.

As for exposure: This book has been, for many years, the guide, philosopher and friend, not only to thousands of beginners, but to thousands of expert photographers in every quarter of the globe. The little mechanical calculator fixed to the back cover really does tell the correct exposure, doing so by one turn of one scale, and that feature is alone worth the small sum for which it may be obtained from any photographic dealer. In addition there are plenty of ruled pages for recording exposures and for photographic memoranda of all kinds, together with a diary for the year. This most convenient pocket compendium can be obtained from all photographic dealers throughout the country. Price fifty cents.

"In the National Army Hopper"

This little book takes the form of a series of letters from one of the boys in camp to the "Folks at Home". The boys in camp are going to find this little book just the thing to send home to their people, to give a vivid realization of what they are doing from day to day. And the people at home are going to want the book, in order to understand that new world into which they have sent their sons, brothers, fathers and sweethearts. The anxious mother who fears her boy won't be cared for as well as he is at home, will have her fears laid at rest when she reads this book, and realizes how many experts are right on the job of supervising that boy day and night. And how well they measure up to the title of experts, too! The author is a noted army officer, who knows the subject from A to Z, and it is surprising to the inexperienced or the outsider to find how much of this information is practically new, in that few of us have had any opportunity to get a complete detailed survey of the soldier's life and duty.

Published by J. B. Lippincott Company, Philadelphia. Price twenty-five cents, net.

"Motion Picture Education"

Ernest A. Dench, the author of several other excellent handbooks dealing with motion picture subjects, gives us, in this, his latest work, a book that answers a multitude of questions in a practical way. We want to know to what uses motion pictures can be put, how one can employ them in his work, what they will cost, and just what their limitations are. This book answers all these questions very completely and gives many practical suggestions for using such pictures in new ways and in new fields. In clubs, schools, churches, hospitals, technical institutes, manufacturing enterprises, promotion work, agricultural activities, and a score of other fields the value of motion pictures is being more fully recognized each day. Motion pictures are an important feature in the education work of today and a book such as this cannot fail of interesting the person wishing to keep abreast of the advance. Published by the Standard Publishing Company, Cincinnati, Ohio. Price two dollars, postpaid.

"Arizona, The Wonderland"

The author, George Wharton James, who gave us "California, Romantic and Beautiful" explains his equal enthusiasm in his latest work by the fact that he has almost yearly visited and rambled over practically every part of Arizona for the past thirty years. As alluring as the most exacting tourist could wish, this "Wonderland of the Southwest" is attractive and interesting in a way that is different and defying. The author's style is pleasingly simple and direct, leading the reader to overlook the mass of historical and other information that he is so unconsciously led to absorb by reason of its easy and natural admixture. Decorated cloth binding, nearly five hundred pages, about sixty full page illustrations,—several of them in full colors, and a map. Three dollars and fifty cents, net; carriage paid, thirty cents extra. Published by The Page Company, Boston, Massachusetts.

"Oregon, The Picturesque"

Thomas D. Murphy, who gave us "On Sunset Highways", "Three Wonderlands of the American West" and other delightful and interesting travel books, gives us this latest addition to the "See America First Series" that has become so justly popular since the first was published a few years ago. In it is described most entertainingly a series of motor rambles in the Oregon Country and the Wilds of Northern California, not neglecting to give the reader an intimate acquaintanceship with no small number of such related historical incidents as add to the enjoyment of the reader. Northern California and the eastern portion of Oregon, where one finds some of the most impressive scenery in the world, has too long been neglected, and we are glad to find the beauties of this little known wonderland pointed out by one so capable of describing it. The volume is illustrated with many beautiful colored plates and duogravures and a map showing the author's route is included. Decorated cloth binding. Three dollars and fifty cents, net; carriage paid, thirty cents extra. Published by The Page Company, Boston, Massachusetts.

Illinois College of Photography

The College Red Cross Service Flag indicates a good representation of the student body in this great organization of common interest.

Messrs. Dunbar and Philpot of the school of engraving have gone to join the army. The entire school accompanied them to the station for a "cheer-up" farewell.

Rumor has it that Charles Freil, class of 1917, from Canada, will go away down to Texas to wed Miss Mona Baker, also of the class of 1917; and this is not a matrimonial bureau either.

Many of our former students write that they are entering the Signal Corps, while others are enrolling at the college with the intention of qualifying for that branch of the service.

J. Siew of Canton, China, has just completed a course in photography, having taken a course in photo-engraving some months ago. Mr. Siew sails for China at once, where he will open both an engraving plant and a photographic studio.

Miss Helene Blankvoort of The Hague, Holland, has enrolled for a course in both photography and photo-engraving. Because of the especial aptitude possessed by Miss Blankvoort, we bespeak for her a very successful career in her chosen work.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

Frank Goodner and wife of Reno, spent New Year's day in San Francisco, stopping at the St. Francis Hotel.

Clarence De Fries, manager of Davies' studio, Portland, toured California after the Christmas rush.

Jno. T. Hall of San Luis Obispo left his card under my door New Year's day. Sorry I was not in when he called.

Chas. M. Hiller, the automobile photographer, has just completed a fourteen weeks trip, extending from British Columbia to Mexico. He was photographing auto trucks for a large auto manufacturing concern.

Fresno lost a good photo stock man when R. K. Mardon went from the Bowman Drug Company's store there to the Stetson drug store at Corcoran, California.

All the California photographers enjoyed a very good holiday business as far as we can learn.

George Murphy of New York is spending his winter in California as usual. He says its the California climate.

H. E. Burns, formerly manager of the photo department of Bullock's, Los Angeles, is now with Marsh & Company of this city.

Camera Doctor In New Quarters

G. E. Biddell, so long and favorably known to our readers as "The Camera Doctor", is moving, the middle of this month, to enlarged, ground floor quarters, at 53 Fourth Street. This being near Market Street, opposite the popular Hotel Argonaut, it is much more convenient to all his local customers, and the increased space gives him better facilities for handling all classes of work. Increased equipment and more room is required for the repair shop, and the new quarters will permit both. The stock of second-hand cameras, lenses and the like has increased in proportion to the increased business in that line, and this also demands extra space. His advertisement this month does not list any of the bargains on hand, as the desire is to impress the new address upon the mind of his many customers as fully as possible and the preparation for moving makes the selections for a list difficult, particularly with the large stock of such goods to be considered.

A Correct Monthly Bargain List

Henry G. de Roos of 88 Third Street, this city, has the right idea in his method of issuing an up-to-date Bargain List. Heretofore a list was issued every ninety days, but great difficulty arose on account of the numerous items that would be sold and made unavailable before a new list could be sent out, not to mention the new bargains constantly coming in. Mr. de Roos has selected this magazine as the monthly vehicle for his official Bargain List, and will in the future devote his entire page to the listing of used lenses, cameras, etc. Each and every month this list will show representative bargains actually on hand at the time CAMERA CRAFT goes to press. In this way our readers get the correct list in each issue. Mr. de Roos conducts the recognized Camera Exchange of the Pacific Coast; and in addition to exchanging and selling used cameras he buys for cash anything in the photographic line from a printing frame to a complete studio.

"Two Bits a Day" Clubs

Out in Phoenix, Arizona, a movement has been inaugurated for the formation of "Two Bits a Day" clubs, the members of which are to buy a quarter's worth of Thrift Stamps every day. Three men each took a hundred Thrift cards, pasted one stamp in each card, and sold the entire lot before two blocks had been covered.

"Two bits" is the old term, dating back to the early days of the country, for a quarter of a dollar, and is still used in the South and West. Every patriotic American now wants "to do his bit"; the members of these clubs are carrying out this idea finely in doing their "two bits" every day. It is hoped that "Two Bits a Day" clubs will be

formed all over the country in the great war-savings campaign.

An Advance Necessary

The Wollensak Optical Company of Rochester, New York, announces that, with a keen feeling of regret, they find it necessary to bring into effect an advanced price list on Wollensak Lenses beginning January fifteenth, owing to the increased cost of material entering into the manufacture of high grade lenses. This step is made necessary by their determination to maintain the high quality as heretofore, and it should be understood that it applies only to their lenses and not to their shutters, auxiliary lenses, or ray filters.

Do More Enlarging

With enlarging becoming more and more important as a part of the photographer's work and with condensers difficult to secure, the advantages of the Parallax Lamp should make a strong appeal to both amateurs and professionals. The light is absolutely uniform and is adapted to practically any form of enlarging apparatus one may have or wish to install. Satisfied users are located in nearly every city or town in the country and one should at least send for particulars and give the matter of using one himself the consideration the matter deserves. The manufacturer, R. D. Gray of Ridgewood, New Jersey, has been well and favorably known to the photographic trade for a number of years as one thoroughly versed in the requirements of photographers in this particular line and purchasers of a Parallax Lamp can be assured of satisfaction therein.

The Movee Camera

The compact little Movee Camera is certainly a marvel of efficiency combined with compactness; and, we almost said cheapness, because the price is at present only thirty-five dollars. It uses standard size film and from samples of the work done with it we should judge that it was fully capable of doing standard quality work. One could hardly expect it to have all the capabilities of the machines costing several hundred dollars, any more than we would expect to find a hand camera capable of doing the work of a studio or view camera; but, like the hand camera, the little Movee is as efficient and trustworthy in its field as one could wish. Write for a copy of the booklet describing it, addressing The Movee Company, 27 Noble Court, Cleveland, Ohio.

Bargains In Used Cameras and Lenses

The full page advertisement of the Bass Camera Company in this issue should be given attention by all those looking for bargains in used cameras, lenses and other photographic supplies. This firm, under the management of Mr. Charles Bass, so well and favorably known to the trade throughout the West, is earning for itself an enviable reputation that is resulting in a greatly increased volume of business. As special attention is given to the buying and selling of used cameras and the like, that part of the business is enjoying a constant and steady development, such as the large list published from month to month can only suggest. Send for a copy of "A Thousand-and-One Camera Bargains", addressing Bass Camera Company, 109 K Dearborn Street, Chicago, Illinois.

Orthochromatic Plates and Uncorrected Lenses

An achromatic lens, as every photographer knows, is one which has been built up of more than one kind of glass, in order to counteract the effects which would otherwise follow from the facts that light does not consist, ordinarily, of light of one color only, and that the different colors are differently refracted. A non-achromatic lens, therefore, brings the light falling on it not to one focus but to many, and the effect of this is that the image does not appear sharp. On the screen we see fringes of color round the different prominent details, and in the photograph these fringes are represented by blurs.

It has long been recognized that a non-achromatic lens can be made to give a sharp picture, provided the light used is of one color only. What are called monochromatic light filters are made, and have extensive employment in photomicrography. Not that the photomicrographers use lenses that are not achromatic, but that even the most perfect correction does not come up to the theoretical ideal, and, in most cases, the definition is improved by the limitation of the light in this way. Definition in photomicrography is, of course, of the utmost importance: an impressionist photomicrographer is almost unthinkable.

It naturally occurs to the photographer to inquire how far this same principle is possible in ordinary work. Lenses that are altogether uncorrected are not entirely unknown, but they are generally used for the express purpose of getting diffusion. Thus, for example, we have the Dallmeyer-Bergheim lens, which has no achromatic correction at all, consisting simply of a single positive with a single negative, forming an extremely simple telephoto combination.

It may be asked by those who are not very familiar with the subject why, having obtained a lens specially designed to give unsharp pictures, we should trouble ourselves about devices which are intended to counteract this particular characteristic; but the question can be answered satisfactorily. When using a lens of what may be called the soft-focus type, it is very seldom that one does so with the idea of getting the whole picture uniformly blurry. We may wish to have none of it critically sharp, but still desire to put emphasis on one part and to subdue another by differential focusing. This we can do with a soft-focus lens; but if the lens is altogether uncorrected the distribution of the focus which we see on the groundglass will not be the same as we shall get in the photograph. This constitutes the great difficulty of photographing with such lenses successfully: we have got to allow in some way for the difference in position between the focus for the light to which our eyes are most sensitive and that to which the plate is most sensitive. Sometimes this is done by moving the focusing adjustment some predetermined distance after focusing, sometimes by the use of a supplementary lens during focusing, removing it before exposure, or vice versa.

We cannot use monochromatic light filters ordinarily for such a purpose in general photography and so get rid of the difficulty of chromatic aberration altogether; but by the use of an orthochromatic plate and a color screen of fairly deep type we can secure the same distribution of the definition in the picture as we see on the groundglass. The correction afforded by a non-screen plate is, by itself, hardly sufficient; but anyone who uses non-achromatic lenses for landscape work, and with them a five times, or deeper, color screen, and an orthochromatic plate, will find that there is no longer any necessity to allow after focusing for the difference referred to. Still more may it be ignored when a panchromatic plate and a filter of the K3 type—a combination more and more used by landscapists—is being employed.

The most widely used uncorrected lenses are "spectacle lenses". They are very cheap, and can be obtained in sets, giving a wide range of focus. When used in the way described, it will be found that they offer no more difficulty in the matter of judging on the groundglass the degree and the disposition of the definition than does any ordinary corrected lens.

Working in this way, it is not to be expected that we shall get an image any sharper in general than we should do by using no screen at all and a plate that was not color-sensitive. We could only get an improvement in this direction by cutting off altogether all light except that of a single color; but we can make certain that the focusing effect which we see on the groundglass is that which we shall get in our picture, and so can remove one of the chief difficulties met with when using lenses of this type.—W. D. in *Photography*.

The New Prosch Booklet

Any reader who ever has occasion to make a flashlight picture should write the Prosch Manufacturing Company, 334 Fifth Avenue, for a free copy of their valuable new booklet. It contains a mass of information concerning such work, both for the professional and the amateur, together with full description of the many Prosch devices. On page thirty-three is a diagram showing just how a series of bags were located for an actual banquet with position of the camera, the speaker's table and the tables at which the guests were assembled. We are not sure, but believe the diagram covers the making of the Y. M. C. A. dinner to Mr. Scott, a picture of which is reproduced in Mr. Gorodess' article in this issue. A table on page eighteen is also of great value as giving the amount of powder required for rooms of different sizes ranging from 6x15 to 60x130 feet. But the book is sent free and writing for one is the easiest way of finding out what a valuable one it is.

The very highest products of man's life in this world are his ideas and ideals.—Mabie.

CAMERA CRAFT

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CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

FAYETTE J. CLUTE, Editor

CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

VOL. XXV MARCH, 1918 No. 3

A Camera On The Ranch

By Frank Reeves

With Illustrations by the Author

In trying to write something that will be helpful and informative concerning the use of a camera on the ranch, I find myself in much the same position as the boy from the country who went to the city to see the sights. After inquiring as to the principal points of interest and the various cars he should

ROPING CATTLE FOR BRANDING ON S. M. S. RANCH

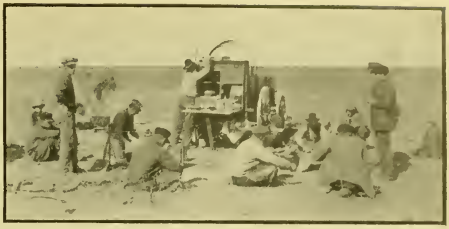
take to reach them, he was unable to make a decision as to which one to visit first. Like this other chap from the country, I hardly know where to begin.

Picture-making has been a hobby with me for a number of years; the pure delight of recording incidents and events has a strong appeal; and incidentally, the element of chance which enters more or less, at least in my case, into the making of every picture, adds to the interest. With me, after minimizing as far as possible this element of chance in my timing of exposures and development of the plates or films, my degree of success has been measured by the standard of naturalness, my aim being the true-to-life records. And while I have no condemnation for the artistic, I am just about as familiar with the rules of art as I am with the German Kaiser.

My photographic career opened up with a magazine camera which carried twelve 4x5 plates. Sometimes, when one worked the little lever that was supposed to change the exposed plate for an unexposed one, it failed to work; or it might, as a variation, change two of them at the same time. Yet I doubt very much if another camera could ever give me the thrill and the genuine pleasure that this one did when I unpacked it, along with the various accessories that I had ordered from a mail order catalogue without being aided or abetted by anyone at all familiar with either the making of pictures or the equipment necessary. While the catalogue did not say so, I got the impression that all the cameras listed were just about automatic when it came to making pictures with them, regardless of the conditions.

But experience is a good teacher, and one of the things that I have learned is that while every camera has its good points and its failings it will, if used within the scope of its limitations, deliver the goods. Since beginning I have used cameras ranging from the small film ones up to those using 6½x8½ plates. I like them all and if I could afford it would have them all. Plates have the advantage of varying speeds, grades, etc., but they are bulky. Films have the advantage of compactness, but are a little more trouble to handle and more expensive. My present outfit consists of a 3A Graflex fitted with a seven-inch Bausch & Lomb Anastigmat. While in using this larger lens, I sacrifice a trifle in depth of focus and width of angle; this, to my way of thinking, is offset by the increased size of the image secured. In my work I often find it impossible to get as close as I would like to my subject or subjects, as the case may be. A bucking bronco and things of that sort are not always the safest or easiest things to approach.

The people I work for own and operate the S. M. S. Ranch of something over four hundred thousand acres, stocked with high bred Herefords. They enjoy the unique distinction of doing a mail order business in cattle. Each year they sell, in small lots, some eight or ten thousand head, and while these go all over the country, to practically every state in the Union, comparatively few of the buyers come to inspect their cattle when shipped from Texas in the fall. In the main my duties keep me pretty close to the office, but opportunities often permit me to get away and out on the ranch, with the result that I am gradually accumulating a collection of pictures that are priceless to me. They not only represent a phase of Western life that is

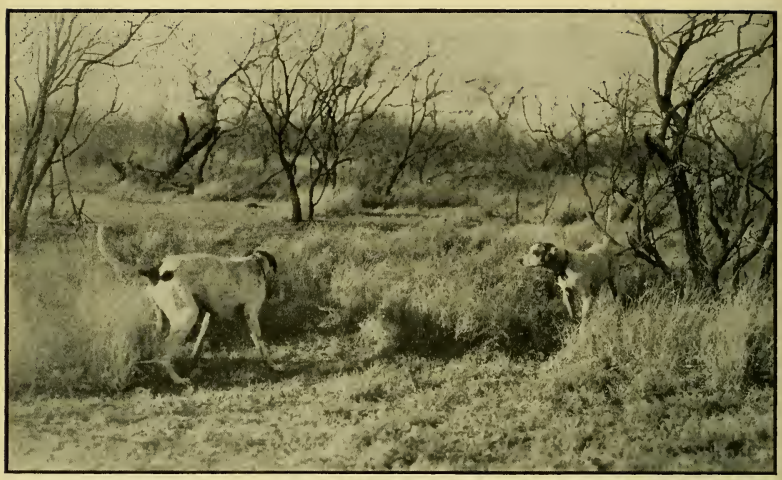


A BRANDING SCENE
ONE OF THE S. M. S. RANCH OUTFITS

DINNER AT S. M. S. CHUCK WAGON
BEEF FOR DINNER

fast disappearing, but each one will later bring back pleasant memories of the time when it was made. A picture of the boys at work dragging a calf from the round-up to be branded, an animal having the ranch brand, S. M. S., burned upon it, someone riding a particularly bad bronc, others killing a beef for the chuck wagon, or a picture of the boys as they are later enjoying a meal fit for a king; these and many others make excellent subjects. If one has

BRANDING CATTLE ON S. M. S. RANCH



A COVEY POINT

ever experienced the pleasure and hospitality of a chuck wagon dinner, he can hardly look at a picture showing the boys gathered around the back end of the wagon, where the meal is served without a longing for the welcome signal from the cook, the hearty command, "Eat it up!" If he does not, he either has a bad case of indigestion, or he is a very peculiar person indeed.

The cowboy of the novel and the moving picture screen is a regular devil whose sole occupation seems to be that of gambling, drinking or shooting up some tenderfoot. The cowboy, as I know him, is quiet and unassuming, a great lover of the true and genuine, with a great detest for the unnatural and unreal. He is often frank to the degree of painfulness; that is, when asked for his opinion concerning a thing, he is as candid as he is unhesitating in expressing his views. If they are favorable, if he thinks a thing good, he merely says so and doesn't slop over doing it; but, if he thinks it bad, he readily calls it bad without any apologies. His judgment is uniformly good, and in my work, it has been my aim and desire to make pictures that the boys would endorse. While they would, to a reasonable degree, be willing to pose and assist in making faked pictures; that is, pictures in which the subjects were posed to secure an effect, I long ago learned that cowboys are much like children in this respect; you can't pose them to look natural. To get anything that is good, one must catch them when at ease, when unconscious of the camera, when busy and interested in their work.

The ranch headquarters and permanent line camps are generally occupied by a married man, and the younger children are always such a source of pleasure to the boys, that the wife and mother is often at her wits' end to handle the situation, and splendid subjects for my camera are often afforded. Then, too, the opening of the hunting season provides me with the pleasure of shoot-

QUAIL HUNTING ON S. M. S. RANCH

ing my camera, as well as my gun, and pictures of my favorite dogs doing their part are always a source of enjoyment as I later look them over.

I do not claim the possession of the only ideal outfit for this kind of work. I decided upon it only after I had added up its good points, subtracted therefrom its limitations, and found that, from my standpoint, a good working balance remained. Just now I have another and different outfit in mind; and, when I get that, and have worked with it, there may be another story,—I am not quite sure. Any particular outfit may be more attractive and more effective in the hands of one person than another. My advice is, regardless of what you have, become familiar with it, know its limitations and its possibilities and be governed accordingly. Then, get well acquainted with your subject, and the chances are you will get some good pictures. While the rankest beginner will sometimes get good pictures, and the most experienced worker will often make a number of failures, in the long run one's successful pictures will be in proportion to the knowledge he has of his outfit and his familiarity with his subjects.

Art

To enable one to translate the crude facts of life in a suitable manner, there must be an atmosphere of mental refinement. The untrained eye sees that a man is a man, and perhaps that a face is a face, but it does not discern the shadows or lights upon form or features. Cultivate it to some degree of artistic power and it will see shadows distinctly, but only the more vigorous of them. Train it still further, and light within light and shadow within shadow will be seen, until at last it will find delight in gradations imperceptible to the untrained eye. These gradations, then, must be sought for carefully, as they are the last parted with as the objects retire into distance.—A. Ashleigh Snow.

Enlarged Negatives

By "Technico"

Some years ago I submitted a number of my pictures, twelve of them, to an exhibition. They were carefully selected views, printed in carbon, from 5x7 negatives. I had done my best in making the negatives, and spared no time or trouble in getting the prints as near perfect as possible. I had them nicely framed and hung them on my allotted wall space. Shortly thereafter the manager of the photographic section of the exhibition came to me, complimented me on my work, and asked if I had other pictures available, as the wall opposite my exhibit had not been taken and he did not like to leave it blank. Learning that I had no others that I cared to show, he said he would try elsewhere to get something to fill the vacant space,—and he did. He went to a commercial photographer and secured a lot of 20x30 enlargements, made from negatives that had been taken with no other object than that of showing the timber on some wooded land in the vicinity. They certainly filled the space, and they were, no doubt, quite suitable for their original purpose, that of getting the attention of a possible purchaser of timber land; but they made no claim to being either artistic or technically good. They had turned yellow, the mounts were dirty, but they were photographs and filled the space. The exhibition was a large one, with the result that visitors devoted only a few minutes to each department. They would enter the room, glance about, and then make a bee line for the large pictures which had first caught their eye; and then, having looked them over, they would pass on to the next room. Bad as they were, these enlargements completely killed my modest little prints over which I had spent so much time and trouble.

On the other hand, when I show even a poor 5x7 print to the owner of a 3¼x4¼ camera, he will say: "That's dandy; I wish I could get pictures like that", even though many of his own smaller pictures may be better than the one I show him. There is no doubt about it, no matter how near perfect a small print may be, it is placed at a great disadvantage when shown in comparison with a large one.

When we come to the method of securing larger pictures, some workers, mainly old-fashioned professional photographers, will insist that the only way to get good results is to take large originals. This involves not only a cumbersome outfit, but the increased expense and inconvenience of large plates. This last would not be so bad were it not that many exposures are not exactly what was wanted and the negatives are discarded. In addition, the large camera must be equipped with a lens having, on account of its longer focal length, much less depth of focus; a serious drawback when conditions do not permit of a small stop being used. Then again, others will advocate the making of ordinary bromide enlargements, a method having much to recommend it, but one that deprives the worker of any choice in the matter of the printing process

A TYPICAL CALIFORNIA COAST SCENE By CHARLES A. HARRIS

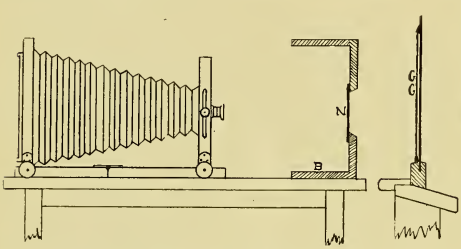
used, and furthermore, should one want a number of prints from the same negative, he is compelled to use the enlarger for each one.

Coming to the one remaining procedure, the making of an enlarged negative, we find all these objections removed. There is, it is true, and added expense for the two extra plates, one large and one small; but, as we will of course deal only with those of our small negatives that are perfectly satisfactory, the added cost is not great. As compared with the making of large originals, the apparent cost is in reality a saving when one considers the proportion generally discarded. It is easy to make enlarged, duplicate negatives from the best of our small ones, negatives that show no noticeable loss of quality. Where the original negative is weak or flat, we can make our enlarged negatives of very much better quality; and, with contrasty originals we can do much to soften the hard, unpleasant high-lights. When the original negative is one that requires working up, we can avoid that bete noire of so many photographers, etching or knife work to remove or reduce objectionable lights; and, best of all, we can make our negatives suitable to any printing process we may elect to use.

The first requisite in making a duplicate negative, be it enlarged, decreased, or the same size, is a suitable positive; and this is where not a few workers invite failure. The positive must not be snappy like a lantern slide; it should have no clear glass areas, but be soft like an under-developed negative from a fully timed exposure. In fact, this positive should resemble a negative that can only be printed on a contrasty grade of developing paper. Our positive

can, of course, be printed on a dry plate by contact, just as it could be printed on developing paper; but, as a camera will be required in making the enlarged negative therefrom, the better results obtainable make it well worth the little extra trouble involved in using the enlarging camera, instead of a printing frame, as so often advised.

Any enlarging outfit that one may have, regardless of its form, will do the work satisfactorily. If none is available, something similar to the one shown in the drawing herewith can be fixed up quite easily and will be found to give results equal to those of even the most elaborate equipment. The camera should be large enough to take plates the size required in the enlarged negatives; but, as it is only to be used indoors, the cheapest one obtainable will answer every purpose admirably. A large lens will not be required, the one with which the original negative was taken will be quite satisfactory, even when the new negative is much larger, because its position in relation to the plate is the same as in ordinary enlarging. Using the small lens and working from a small positive, a camera of moderate extension will permit of considerable enlargement, so that a special copying camera is unnecessary.



This camera is placed on one end of a table, having its other end against a window, this latter preferably affording a clear north light. The light should be well diffused by attaching a sheet of ground-glass, G G, to the window with strips of binding tape. Should the light be uneven, due to obstructions opposite, a piece of prism glass having about eight or ten prisms to the inch, should be fastened to the window, and the ground-glass then moved to about three or four inches therefrom. This will give the same effect as would a reflector placed at an angle outside the window, but be much neater because lying flat against the glass. B in the sketch is a shallow box, used as a support for the small negative, or positive, as the case may be, so placed that the camera may look into it as shown. A hole, one-fourth inch smaller each way than the small negatives used, is cut, as shown at N, so as to come directly in line with the camera lens; thin strips of wood being glued around the edges, so that the negative fits snugly within. Two small springs or turn buttons serve to hold the negative in place. If found necessary, in order to secure good diffusion of the light, one can fix a piece of ground-glass against the other side of the opening in the same manner.

To make the small positive, load a small plate, a slow one, into the holder, using a kit. With the negative in position in the box-like support, focus it sharply and make an exposure, taking care not to cut the time too short. While the exposure required will be short, it is quite impossible to say just what it should be, as so much depends upon the density of the negative and the strength of the light. With a good light, an average negative, and using stop f-22, five seconds would be a good guess for the first experiment. Develop this

ROCK-A-BYE BABY By CECIL V. ASHBAUGH

positive in an ordinary plate developer, preferably the formula given by the maker, taking care not to over-develop.

If the exposure has been sufficient to allow the light to penetrate the densest parts of the negative and development proceeds as it should, the exposure can be considered as being about right. If the development is correct, a little excessive density will do no harm; but, if the positive looks bright and snappy, it has been over-developed and making a good negative from it will be almost impossible. Having been careful not to get the positive too contrasty, we can easily correct any flatness that existed in the original negative by simply developing it a trifle longer. With a little practice, this procedure gives one such control that he will often find it well worth while to make a duplicate negative just for the improvement obtainable. By using a lantern slide or process plate for the positive; and, in extreme cases, for the new negative also, one can, by

A FOGGY DAY ON THE CALIFORNIA COAST By EDWARD LAROCQUE TINKER

full development, make a passable new negative from an original that is quite incapable of itself producing a good print.

Having made the positive, if there is no hand work to be done on it, proceed at once with the making of the enlarged negative, as the wet emulsion will be more free from grain than after it has been allowed to dry. Remove the negative from the opening in the box and replace it with the still wet positive. Load the plateholder with the large plate required for the new negative and proceed as before, remembering that the exposure is increased as the square of the increased camera extension. By varying the exposure and development, we can get practically any kind of a negative we may desire, dense or thin, soft or contrasty, to suit our printing medium, be it carbon, platinum, or what it may. And, by the way, if the new negative is intended for carbon, just reverse the positive when placing it before the camera and the negative will be suitable for single transfer. Given a positive that is soft and full of detail, the making of a good enlarged negative is a very simple matter; and, with a good enlarged negative, the making of good prints is a pleasure, but one has the advantage of a wide choice of printing processes.

Most negatives require, for the best results, more or less dodging in printing. By making an enlarged negative, as described, the worker has a double chance of doing this. Parts held back or shaded in making the positive will be influenced in just the opposite manner from parts so dodged in making the new negative. While more elaborate dodging or control is required, one can flow the back of the original negative, or the positive, with ground-glass substitute and apply crayon sauce to the parts that are too thin. Or, if preferred, a piece of ground-glass can be attached to the back of the negative, and the same procedure followed. Any excess crayon sauce can be removed with a pencil eraser.

While I have no intention of going into the details of retouching, in this article, I should point out, for the benefit of the many retouchers who detest the use of the knife or etching tool, that this way of working makes it possible to avoid etching, even when the original portrait negative is one demanding such work. One can easily see that by using the pencil on those parts of the positive that should have been etched in the original negative, the same result is achieved. And in conclusion, let me say that formidable as these instructions may seem, the photographer, with a very little practice, should have no trouble in making a new negative and getting it into the hypo in half an hour from the time he starts.

Harmony in painting is the connection and agreement of one part with another, either as regards form, light and shade, or color: this agreement proceeds either from a succession of the same forms in different degrees of distinctness, such as arise when we cast a stone into water, producing a succession of undulating circles, or by one form depending upon its adjoining for its completion and unity, as is the case in poetry; or the harshness of isolated forms may be broken down, and harmonized with the whole, by their being hinted at, or faintly repeated in various portions of the picture.—JOHN BURNET.

An Improvised Dark-Room

By Keith Koons

With Illustrations by the Author

Prior to last May, I was a prominent, or I might say, "notorious" member of the Southern California Camera Club. The Government, however, decided, about that time, to remove me to El Paso, Texas; so I donated and traded my stock of photographic chemicals and paraphernalia to other members of the club, intending to foreswear photography. But, only a few months elapsed before I was forced to the conclusion that: "Once a bug, always a bug," and so decided to equip my bathroom as a dark-room and resume my activities.

To "camouflage" the window, I used a red flannel blanket from the hotel bed, fastening it in place with push pins. At a cabinetmaker's I found a piece of light, three-ply wood, three feet square; and this, after being covered with ten cents worth of oil-cloth, was placed on top of the tub to accommodate my apparatus. Three granite-ware trays, 7x9, costing thirty-five cents each, are used for all work.

For a printing box I took an ordinary tin cracker container, eight inches wide, twelve inches long and ten inches deep. A light wooden frame was so constructed that it would fit into the box with its side bars or members about one and one-half inches from each side, and about four inches from the top. This frame carries three fifty-watt Mazda lamps, two on one side, and one on the other. As regular sockets cost money, and none could be "found", holes were cut in these side bars and the fifty-watt lamps screwed therein. To make the proper connections, some brass picture hooks were flattened out, cut into strips, holes punched in them, and two of these screwed to the bars at each bulb in such a position that the end of one came in contact with the threaded portion of the lamp stem and the other in contact with its extreme end. Wires were run along the bars and contact made with the the screws holding the brass strips, thus wiring the three globes in parallel.

In one corner of the frame, on an extension of one of the strips, a small globe was attached in the same way, and covered with a red cloth. This was so wired that when the white lights were switched off a red light was on. When the frame with the lamps was placed in position in the box, the three fifty-watt Mazda lamps were supported horizontally in a staggered row, two extending into the box from one side and one from the other, with the small red light in one corner near the bottom. A fifty cent "two-way" switch was purchased and attached to the front of box with small machine screws. To this the wires were connected in such a way that with the handle to the left the red light is on and the white ones off and when to the right the white or printing lights are on and the red one off. An old fiber shoe horn was soaked in water, flattened out.

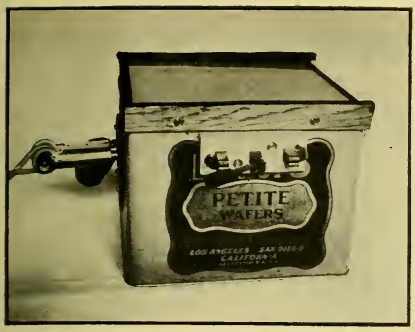
and two contact terminals, requisitioned from an old electric iron, were attached thereto. This was fastened, with small bolts, over an opening in the end of the box and the wires from the globes and switch connected. The cord of the same electric iron is used to make connection between the box and the wall socket, and this is found more convenient than the usual cord, as there is none of the twisting involved in the use of a screw socket at both ends.

Ordinarily only one sheet of groundglass is used for diffusion. As the required size is quite expensive, I made my own, using five cents worth of No. 120 carborundum powder. To do this, simply lay one sheet of glass on a perfectly smooth and level surface, throw on carborundum and water, and then rub another sheet of glass over it, using a circular motion. In about ten minutes you will have two sheets of groundglass as the result of your work. Sometimes the glass is not quite flat and light spots or "holes" will occur. These may be rubbed out by using a small piece of glass and some of the powder and water directly over them. The top of the box was faced with light strips of wood, slotted to receive the groundglass. To print the negative, the paper, and the matte are laid upon the groundglass top of the box and the first two centered by means of the small red light in the bottom of the box. A cigar box full of sand, with a handle attached to the top and a piece of felt glued to the bottom, is placed on top to hold paper and negative in good contact. The switch is thrown over to the other side and the exposure made. This procedure is much quicker than that necessary in using a printing frame, but of course it does not permit of "dodging". When this last is necessary, the printing box is turned on its side and a printing frame used. This box accommodates negatives up to 6½x8½ size; and, using the three, fifty-watt Mazda lamps, ordinary negatives require from two to ten seconds' exposure.

With a black cloth cover, one having an opening the size of the negative, to pull over the top of the box whenever the white light is turned on for printing, development can be carried on uninterruptedly at the same time. The bath tub makes an ideal washing box, into which the prints are dropped as fast as developed and fixed. A small funnel is inverted on a piece of gasket rubber, in which is a hole coming directly over the drain. The water enters the tub through a hose at the opposite end and overflows through the stem of the inverted funnel as it rises high enough to do so.

This same printing box is also used to form an enlarging apparatus by fitting to it an old No. 3 Brownie enlarging cone with the center partition arranged to take a No. 3 Special shutter and f-6.3 lens. An extension was built on the large end of the cone to accommodate the increased focal length of this lens. With two sheets of groundglass for diffusion, a 3¼x4¼ negative is enlarged to 6½x8½ in from forty seconds to two minutes on P. M. C. bromide paper.

To develop films a lamp was made by taking a cigar box, fitting it with a ruby and an orange glass, and suspending a small electric globe inside. This last was fitted to a socket made by boring a hole in a block of wood, and arranging connections in the same manner as in the large box. For bromide or Velox paper developing, the ruby glass is removed and only the orange glass used.



THE PRINTING BOX, THE ENLARGER AND THE SCALES

Of course, this style of connections would never stand inspection and are not to be recommended for continuous use; but as they are never connected up with the house current, except when one is present, there is no danger.

As purchasing developers and the like already compounded is expensive, I felt that a set of scales were needed, and an expenditure of twenty-five cents and a little time provided me with ones that would weigh from one grain up. A strip of brass, eight inches long, one inch wide and one-eighth of an inch thick, was rescued from a scrap heap and three neat holes bored therein; one just above the center and one at each end near the lower side. As the proper tools were not available, these holes presented a problem that was solved by inserting a Victrola needle in a cork, holding the cork tightly against the brass and striking the needle with a hammer. Taking apart an old alarm clock, a suitable wheel was selected and the lower parts of the front and back frame of the clock cut away. The shaft of the wheel was pressed through the center hole in the brass bar, the minute hand of the clock pressed over this for a pointer, and the wheel then mounted in its natural bearings in the remaining part of the clock frame.

As these clock bearings are very smoothly fitted, this little wheel shaft forms an axis on which the brass beam swings very easily. To each end of this

last was suspended, by three six-inch lengths of small chain, a three-pronged piece of tin cut from a tomato can. On these last rests the two small aluminum trays, used as scale pans. This part of the clock carrying the brass beam was mounted on a small block of wood which in turn is supported, at the proper height above a heavy wood base, by means of a stout wire standard. Pieces of lead were hammered out and from these weights were cut; an obliging apothecary permitted the use of his scales for determining the proper size of pieces to make the five, ten and twenty-grain weight. Other sizes were computed from these, small bags of shot being used for the half ounce and ounce.

This entire equipment for converting a bath-room into a dark-room for developing, printing and enlarging, cost less than three dollars; and, insofar as rapidity and convenience is concerned, the printing box could well be used for a limited amount of commercial work.

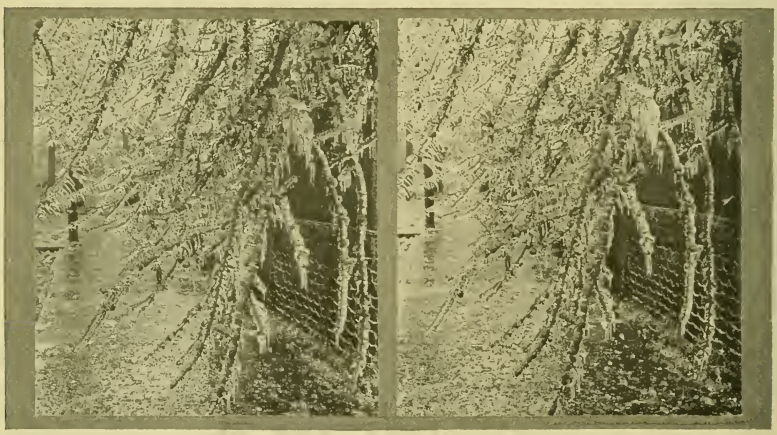
N. B.—After writing the above the author finds himself again transferred (however at his own request) to a branch of the Government service in France, where he takes up his duties some time in March and where he will, no doubt, of necessity, again forswear photography, at least during the duration of the war.

An Improvised Stereo Equipment

By John B. Gale

With Illustrations by the Author

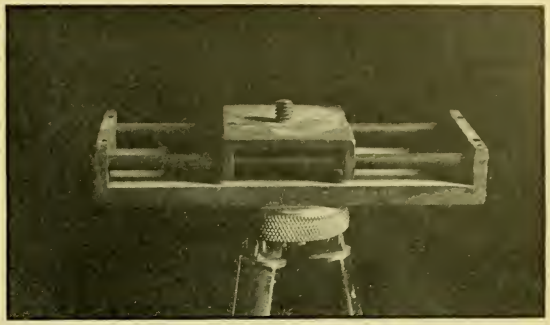
I have long been an ardent admirer of stereoscopic views, my interest in them antedating my taking up of photography. Feeling that I could not afford to gratify my taste in that direction to the extent of another and larger camera,



THE JEWELS THAT JACK FROST BESTOWS

AN IMPROVISED STEREO EQUIPMENT

I devised a simple piece of apparatus, shown in the illustration herewith, that permits me to make stereograms of inanimate subjects with my ordinary 3¼x4¼ camera, making two separate exposures for the two required elements of the complete stereoscopic picture.



The illustration makes a description almost unnecessary. The part shown in the center is fitted with a tripod screw to which the camera is attached, the base of the device itself being fitted with a bushing that permits of its attachment to the tripod. The first mentioned or sliding part allows the camera to be pushed to one end of the device, an exposure made, then pushed to the other side and the exposure repeated. The whole thing is very simple, an extra tripod screw and bushing being about all the material required. The ends of the rods are set just a trifle further apart than the holes in the sliding portion, so that the latter pinches a little and holds the slide fairly tight when shoved to either side. There is, I should explain, a screw that goes through the side of the sliding portion and engages the shank of the tripod screw that holds the camera. This does not show in the picture, but is important, as it permits the camera to be screwed down tight.

In reality, this device, if made somewhat longer, would give better results,

ICE FORMATION ON THE BOUGHS OF A TREE

in a great many cases, than would an ordinary stereoscopic camera. This for the reason that the amount of separation between the position of the lens in making the two elements of the picture could be altered to correspond, as it should, with the distance of the view. The amount of separation given the lenses in a stereoscopic camera is that best suited to an ordinary view; near objects, such as still life studies and the like, being rendered with a distorted perspective, owing to the separation being too great; while distant views are lacking in proper amount of perspective, because the separation is insufficient. With this device of mine one could easily limit the separation to a distance short enough for very near objects, and increase it to the full capabilities of the two rods for distant views.

The pictures herewith record ice formation on the boughs of different trees during a recent storm. They were made on a dull day in December at about 9:30 A. M. An Eastman film was used and an exposure of one-fifth second given with stop f-16. It was raining at the time, but an umbrella in the hands of one of my children protected the camera and myself, while the exposures were being made. If one will examine them by placing the page in position on a stereoscope, I think they will agree that the effect is much more interesting than when looked at in the ordinary way. Such pictures as these are much superior, in the stereoscopic form; and, where no movement prevents, this simple device makes an ordinary camera fully equal to the requirements.

Those Distant Views

By B. F. Loomis

With an Illustration by the Author

A few days ago I was commissioned to make a photograph to include part of a house in the immediate foreground, a cluster of buildings in the middle-distance, and old Mt. Shasta some hundred miles in the extreme distance. I explained that this was a rather large order for a small plate, but I would try and see if it could be done. Difficult pictures always have a strong appeal for me, and I was only too glad to undertake the task.

My 6½x8½ camera was loaded with a Cramer Instantaneous Isochromatic plate; and, my two ray filters, one a five-times Bausch & Lomb, and the other a Goerz Medium three-times one, were both placed in front of the lens. Taking out the front combination of the lens gave me a focal length of sixteen and one-half inches, practically a telephoto lens. The stop used was marked f-22, and it may be well to explain that I use the D set of Bausch & Lomb Protar lenses, which has the f-valve of the stops for all the combinations, marked on the case of the Volute shutter. There is, therefore, no guesswork and no figuring as to the value of the stop, as one need only note the focal length of

RANCH WITH MOUNT SHASTA IN THE DISTANCE

the lens or lens combination used, and then look for that length on the scale, where all the various stops are marked. Of course, stop f-22, with the sixteen and a half inch focus is not the same as for the other combinations; for, while with this focal length the diaphragm is about three-fourths inch in diameter, on some of the shorter focal lengths the same stop, f-22 is only about half as large. I gave the plate an exposure of eight seconds, and that was none too long. This goes to show that Mr. Hood's plan of increasing the exposures by multiplying together the "times" of the two filters and using the product, rather than their sum, as a multiplier, is the most satisfactory. The right exposure for the unscreened lens would have been about one-half second, as the reader can figure from any exposure table, using the data given. Multiplying by eight, the sum of the "times" of the two filters, would have given four seconds as the exposure. Multiplying by fifteen, the product of the two "times" of the filters multiplied together, gave seven and one-half seconds, the exposure given. I used an old developer, as such a one contains more bromide than when freshly made, and this holds back the sky and the distant view. The result is a more uniform negative, one that brings out, in this case, the distant mountain, much better than would a fresh developer, had it been employed.

Last winter I told, in these pages, about my experience with multiple ray filters, and the pictures published therewith attracted considerable attention. The Bausch & Lomb Optical Company requested one of my pictures for their catalogue, and that leads me to think that these very distant views are not common. I am, therefore, giving all the details in order that anyone can do equally well should they take the pains to try out my plan on a like subject. In this

instance I not only got the distant peak, but also a small cloud that floated just above. It is perhaps needless to say, with the shadows so well defined, that the picture was taken about ten A. M,. in bright winter sunlight.

I do not claim that the result is either picturesque or artistic. I have read perhaps a thousand pages concerning lines, balance, composition, etc., and yet have no clear conception of what constitutes an artistic picture in the learned acceptation of the term. I have read what some art critics had to say in whole pages of commendation concerning a fuzzy kodak print that the most primitive "snapshotter" could duplicate with his eyes shut, and yet I failed to see the artistic side of the picture. I realize, however, that two or three nursery trees and a few hop poles do not make a very picturesque foreground and my apology is that I took this pictures because it was ordered.

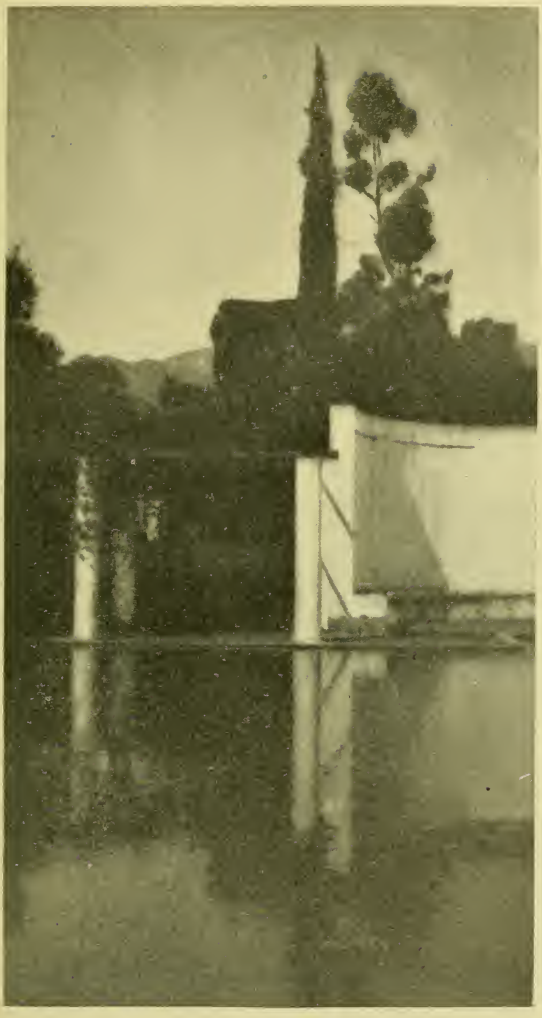
Mr. Browne's Criticism

By F. Morris Steadman

On re-reading the first part of my September article, I find that Mr. Browne is justified in saying, as he did in the January issue, that I refute myself therein. In saying that the so-called "law of inverse squares" is in no way a law of light intensity, my words were not well chosen. I should have said that it is not a basic law of light intensity. I also find that, while I argued against the explaining of light intensity by means of a mental picture of a point light source and diverging rays, I did not make it clear, in short, direct sentences, that I considered this point source idea the one great fallacy. This fallacy corrected, the erroneous application of the law of inverse squares to diverging, instead of to converging light, becomes apparent.

Since not only Mr. Browne but other gentlemen, whose letters have been forwarded to me, hold that I am confused as to this law of inverse squares, let me make a clear statement of my belief as regards light intensity. I condemn entirely the idea, when associated with a consideration of light intensity, of rays diverging from a point source. I hold that light intensity is not created by rays that diverge from a point. In vision we differentiate between the fine points seen on any surface, and in photography we recognize the individuality of each grain of the sensitive salt in our emulsion, the different amount of light that each receives during the exposure being the measure of the variations in resultant opacity when the plate is developed.

I admit that, should one be willing to reason from a non-existent condition, such as that of intensity being created by the light radiating from a technical point, the law of inverse squares can easily be proven true. In my former articles I have shown that a cone of green cheese will also conform to the law; since, if bisected at a given distance, and again at half such distance, from the apex of the cone, the areas of the faces produced will be as four to one. To quote from my former articles, the law of inverse squares "is a geometric law that has to do with the form and not with the thing itself".



IN AN ITALIAN GARDEN
By EDWARD LAROCQUE TINKER

Mr. Browne has apparently overlooked the relative importance of the ideas presented in my former articles, perhaps because of my carelessness in the wording, as I have already explained. This idea of convergent light is not new; it has been applied to the function of lenses since lenses have been used. And I am only laboring to bring about a general recognition of this same law and its application to the natural conditions of illumination. While I hold as erroneous the application of all intensity laws, including that of solid angle to the point source idea, as also the belief that the law of inverse squares is a basic law of light, I believe in and accept the latter as fully as does Mr. Browne and the books, when applied to diverging light. In the unit system of photography, the law of inverse squares is employed as a practical, not as a basic, one. Applied to converging light, the error or depature from the truth resulting at each multiple of the source's diameter is a matter of computation, and therefore is not open to argument. There can exist a difference of opinion as to the amount of error necessary for "inaccurate results", but the amount of error itself is computable.

Taking the solid angle cone that I have selected as the unit in my system, the form f-64 or one resulting from the sixteenth subdivision of a hemisphere, it is found that at sixteen diameters from the light source the error involved amounts only to seven one-hundredths of one per cent, or practically the same as no error at all. At four diameters from the light source the error has reached five per cent, an extent having absolutely no noticeable effect in any sort of photographic work, as any practical photographer will agree. In my unit system of photography, I accept a convergence resulting when the opening is only one diameter of the source from that source, notwithstanding that this introduces an error of eighteen and one-half per cent. This convergence gives a cone having the form of f-1, equal to one-eighth the solid angle of a hemisphere, one still applicable in photographic practice; but, as the opening is brought nearer the light source, the law of inverse squares departs violently from the truth, since the spherical nature of the light convergence must be reckoned with and distance and area cease to be factors.

We are taught to base our idea of light intensity on a mental picture of light diverging from a point, and we are told that the law of inverse squares is only true when applied thereto. In criticism, let me say:

First, nature has no point light source; second, the law of inverse squares is, as Mr. Browne has stated, not applicable to natural illumination; third, other of the critics say, quite truthfully, that the area of the surface illuminated is not a factor of its intensity; and, fourth, my critics, while holding to the proposition stated above, also explain how the intensity law of inverse squares can be proven true for a point source, by making the illuminated surface alter its curvature at each change of distance in order that it may retain its concentric form in relation to the point light source, despite the fact that illuminated surfaces, in nature, practically never take such form.

I would ask: How is it possible that the form of an area can prove the truth of an intensity law, when the area itself is not a factor? These gentlemen take the form of a thing that is not a factor of intensity, in order to prove true

a law that is not applicable to natural illumination; so that, by means of that law, light intensity may be computed for a point source of light, something which does not exist in nature.

This ridiculous situation, based on fantastic and inapplicable theories, is today being taught in our schools. Its results are mirrored in the universal popular ignorance of all matters pertaining to light, whether in photography or out of it. In our conception of light converging from the area of a lens stop to a point on the focal plane, the right idea is employed. Light coming through a window and converging on the page of a book acts in the same way. The larger the window or the closer the book thereto, the nearer to a hemisphere the convergent volume would be. The light may converge from a whole sphere or from the smallest pin-hole; and the amount of such convergence is a true measure of the effect such light will produce.

Mr. Browne questions the simplicity of my system, evidently ignoring the first two pages of my October article. These last certainly prove that my system is easily understood. The first class before which I spoke regarding it, was the physics class under Professor Klock, in the Ethical Culture School in New York City. In the fifteen minutes given me I presented the truths of light action as I see them; and, by asking what they thought should be done in the way of measuring intensity, placing value numbers, etc., they themselves develop my whole system of unit photography, including the unit of convergence for solid angle measurements. And this was done without a dissenting voice and without the least doubt or hesitation in arriving at conclusions. They also computed several practical problems of exposure, doing so instantly by the same simple reasoning from cause to effect. Before every such class to which I had the pleasure of talking, this experience has been duplicated.

I recall, however, a different experience with a class of teachers in the normal department of Columbia College. After illustrating the fact, as taught in Barker's Physics, that the thermopile hood secured a constant effect in the instrument by confining the converging cone of radiations to a fixed solid angle, while the distance from the radiating surface was varied, this question was asked: "If the constancy of the effect is secured by the constancy of the solid angle of the impinging cone of radiations, regardless of the elements of distance and area, to what should we trace variations in the effect?" One young woman had the moral courage to reply: "To alterations of the solid angle." The others I imagined were saying to themselves: "True for a point source." But they chose to keep silent. I cite this incident simply to show the difference between those whose minds are dominated by what they have learned from books and the young who are not so hampered in the grasping of truth.

Mr. Browne should not deceive himself regarding the measure of simplicity possessed by my system. Simple numbers employed to represent simple values make for simplicity in dealing with either light intensity, beefsteak by the pound, or buttermilk by the quart. The simplicity of my system, in practice, is due solely to the ordinary use of numbers to express values, which enables the mind to reason directly from cause to effect in the solution of the problems involved.

A Profitable Side-Line

By Frank B. Howe

The photographer in the small town where the opera house is visited now and then by a small repertoire or vaudeville company, and his brother in the large city with its ten, twelve, or more theatres, are overlooking an exceptional chance for extra business if they do not put forth an effort to get the job of making some of the thousands of photographs required each year by theatrical people.

Probably the theatrical business uses more pictures, as a business, than any other profession. Photographs are needed for newspaper reproduction, for display in the theatre lobby, to send ahead to the next town for advertising, and for numerous other purposes. It is indeed rarely that a newspaper returns the picture or that the picture is fit for further use after standing a week in some dusty theatre lobby. Consequently the supply constantly has to be refreshed, and therein lies a golden field for the photographer who can do satisfactory copying.

The reason for this is simple. An act or show starts out from New York. It may run for five years or it may fail the next week. Consequently, it may need a dozen pictures or a thousand dozen before it gets done. When it starts, original pictures are taken, but enough cannot be ordered to exactly last the production through its uncertain length of life without danger of having far too many, yet it is necessary that the same pictures be used in each city. So only a few are ordered; and, as the supply runs low, the photographer in the particular city where the show happens to be, is visited and an order left for sufficient to last eight or ten weeks longer. Therefore the photographer who can do good copying and get the work out in a reasonable time can find a good field for a side-line requiring no new materials or outlay.

What is most used in satisfying the needs of this profession are 6½x8½ or 8x10 black-and-white, semi-gloss reproductions from originals, on double weight white paper, unmounted and not backed, in quantities of twenty-five, fifty, one hundred or more from the same negative, just as they come from the printing frame. Generally a quarter-inch white border is desired.

As to prices, it is customary to charge from ten dollars to thirty-five dollars per hundred for reproductions as herein described. The average is about twenty dollars for good work. If sepias are wanted, or some special finish desired, an advance is permissible.

To get the orders, one must solicit, for it is to be remembered that the actor or manager is a stranger in town. The way may be well paved by a judicious arrangement with the manager whereby, perhaps, the photographer makes some pictures of the theatre or its manager in return for the privilege of hanging, in the dressing-rooms, small cards stating that:

ADAM PYROSTAIN

123 First Street, Yourtown, Cal.

SPECIALIZES IN THEATRICAL PHOTOGRAPHY

Best Quality Reproductions

at Lowest Prices

Armed with a book of samples and with some specially printed business cards, something like this:

Quality Reproductions Lowest Prices

ADAM PYROSTAIN

Theatrical Photographer

123 First Street Yourtown, Cal.

the photographer sets forth in search of orders.

Vaudeville is the most profitable field, for each act has to furnish its own pictures. The best time to visit them is at night, after the act has finished its first show. By the use of small change, or possibly by making a dozen pictures of "the wife", the stage doorman can be prevailed upon to admit the photographer to the theatre's stage. The actors will be found lounging around in the wings or dressing-rooms waiting until it is time to "go on" for the second show. The manager of each act can easily be ascertained by inquiry, and it is then a mere matter of business to introduce oneself, show the sample book and take orders.

In the dramatic and musical comedy companies, it is only necessary to see the show's manager, which can be done during the day, usually at the office of the house manager. With these shows, there is no need to interview individual actors or to go back of the stage, since the company provides all necessary pictures.

There are, of course, other opportunities that will present themselves, once the photographer becomes established, varying with local conditions. Once in a while an act may want some new originals taken. As a rule, this must be done on the stage, using flashlight; although, if the scenery is not required,

they can be made in the studio. A stock company, staying week after week in a city, presenting different plays, is likely to need originals each week and it is well to interview the manager of such a company. These pictures would, of course, be taken on the stage, by flashlight. In this case, the use of theatre spotlights, which are arc-lights and therefore very actinic, is of great help.

Post cards, either originals or portraits reproduced on post cards, are sometimes very salable; and other novelties, such as the Taprell Loomis leather goods with small portrait reproductions or little pictures of the act or show may be found to go well. These extras work themselves out differently with varying local conditions and the alert photographer will be able to devise numerous little side-lines.

This is a field of which surprisingly few photographers are aware, and the man who gives it a trial is not likely to be disappointed in results if he produces the requisite quality of work. As Milton Waide would say, "It's all velvet," for whatever is made this way does not affect the photographer's regular business and puts him to no extra expense. And pictures, in the theatrical business, are a necessity, not a luxury.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

A SMALL SAVING: The making of bromide enlargements is no small part of my work, and until recently a good part of my waste-paper basket contents consisted of the nice strong black envelopes in which each dozen sheets of the paper was packed. Now I save them all, paste my business sticker on the corner, use a white pencil for writing the name and address of the customer, and deliver no small part of my work in them. They do not look like a make-shift; in fact, have quite a novel and business-like appearance. One of my customers even went so far as to ask me if I wasn't getting a little "high-toned", using such good enclosures in which to send out my prints.—W. A. S., California.

FIXING ENLARGEMENTS: I do not know the chemistry of the matter, but my experience has led me to firmly believe that an acid alum fixing bath is not conducive to the permanency of bromide enlargements. The ill effect of a strong acid upon the hypo of the bath can be avoided by using potassium metabisulphite, this last having nearly if not all the clearing quality of the acid-alum concoction. It is best used by making a solution of one ounce of the metabisulphite to every four ounces of water of the stock solution, and then using of this last about four ounces to every pint of the hypo solution. If the metabisulphite is not easily obtainable, sulphite of soda can be used for making up the stock solution in the same proportions and adding sixty drops of sulphuric acid to every four ounces of the solution. In adding this stock solution to the fixing bath, use only about one-half as much as recommended for the metabisulphite solution.—H. Y. N., Missouri.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

Vol. XXV San Francisco, California, March, 1918 No. 3

Are We Too Serious?

We are,—and we are not. We are, all of us, entirely too prone to take ourselves rather too seriously, while falling far short of taking our work as seriously as we should. The one who goes on from year to year, using his camera as a means of securing an occasional batch of indifferent mementoes of a trip or vacation, excuses his failure to show improvement by explaining that he has not the time to go into the technique of photography, much as if doing so would really be somewhat beneath one whose time can be so much better occupied. The worker who has taken the time and trouble to achieve a good measure of technical skill, glories in his capabilities and is perfectly satisfied therewith. He can assure you that he has thrown away, as defective, many negatives that were just as weird, as "fuzzy" and out-of-focus as those used in producing some of the things shown as artistic productions on the walls of the salons. The exhibition worker, the one striving to produce the pictorial, has only sympathy for his brother photographer who has no appreciation of art and its requirements. And so on throughout the list. It is never a matter of photography, its requirements and its capabilities, but always the individual superior position in relation thereto.

If we would but give the matter a little serious thought, we might see the wisdom of looking at our photographic work in a more impersonal manner. Doing so, we might find ourselves with a more charitable inclination towards those who fail to agree with our own ideas on the subject. We might even realize that photography has capabilities in a number of directions, and that these expanded and enlarged as the effort and application of the one who would avail himself of them, are increased. And another fact would become apparent, the rather obvious one that, as there is no one special field that can claim photography as its own, the worker in one field can learn from his co-worker in another if he would but consider his work, rather than himself, of the major importance.

The pictorial worker, the salon worker, could, in a large number of cases, improve the pictorial quality of his work by acquiring a greater command of the technique of photography. He could profit also by a closer study of the ways and means employed by artists using other mediums, doing so with an eye to their application to his own work. The photographer who sees photographic excellence only in work of high technical quality, should realize that a knowledge of art principles, if applied, would add to the value of his productions by giving them an appeal to a larger number. He could, with an increased appreciation of photography and a decreased one of his own importance, perhaps realize that the lack of sharpness he finds in some salon pictures may not be entirely without reason back of the intent.

The real truth of the matter is that photography will give us about what we are willing to put into it. The one who has acquired an understanding of the principles of art will find the camera and lens quite responsive to his desire for artistic expression. The individual who is lacking in an appreciation of the pictorial will, no doubt, find pleasure in achieving, to a greater or less extent, the technical excellence that the mechanical nature of photography makes possible. In neither case is there any reason for the assumption that photography has but the one right and legitimate application. Our own part is but a small one, it is our work that really counts. And it is our work that we should take seriously. If we use the camera simply to record the scenes and events we may wish to recall at a later day, let us make these records good examples of such work. We should neither belittle the efforts of others who employ photography in a different field, or exalt the sphere of our own as the only one. Let us do our particular line of work as well as we can; and, in so doing, find that measure of satisfaction that results from all work well done.

Goods That Are Not Advertised

We are constantly receiving letters asking concerning the merits of this or that unadvertised camera, lens, plate, paper, or other photographic utility or material that has been brought to the attention of the correspondent. Some of these goods we know nothing about, others we know do not compare favorably with the advertised goods, and some few we believe to be quite meritorious, and consequently have no hesitancy in saying so. But these inquirers do not seem to realize that in writing us they are answering their own questions. Their letters are the result of their own lack of confidence in such goods, and this distrust is well founded. The photographer knows that practically all of the equipment and material that he is using and finds satisfactory, has been regularly and consistently advertised in the better photographic magazines, and he quite naturally feels some doubt as to the merits of goods brought to his attention in a less direct and logical manner. We do not mean to say that all goods not so advertised are unworthy of consideration; but, the fact remains that the unworthy, the unsatisfactory, is not so presented. It does not pay to advertise an article that fails to give satisfaction. In a few cases the producer, through the wrong presentation of his wares, found the results disappointing, and therefore condemns advertising. But these cases are exceptions, and they are never of any great importance, because the element of success is lacking. So we find that, generally speaking, the manufacturer who fails to advertise has a good reason therefor, and one such good reason is that his goods are not of a quality to produce repeat orders, the only kind that make advertising profitable.

A distinguished art critic has remarked: "The highest art is the imitation of the finest nature." That is to say, the imitation of that which conveys the strongest sense of pleasure or power in the sublime or the beautiful. The "ideal in art" is really the selection of a particular form which expresses most completely some character or quality, such as beauty, activity, strength and the like, and preserving the character consistently throughout its representation.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D., Burlingame, California

Wet Gelatine Emulsions

The *British Journal of Photography* reprints the lecture by Charles M. Thomas at the Royal Photographic Society, as below, not with the idea that the details will serve any purpose other than that the home preparation of gelatine emulsion suitable for the manufacture of lantern plates of slow speed. It is pointed out that this is an unwashed gelatine emulsion, and therefore differs essentially from those used for the coating of negative plates and bromide papers. Still the instruction and formulæ which he offers provide the material for simple experiment in emulsion making, such as is within the capacity of anyone having ordinary experience in photographic work. Mr. Thomas said:

No investigations on the gelatino-bromide process, invented in 1871 by Dr. Maddox, have been published in recent years, and the reasons are not far to seek. The first is the excellence of th modern dry plate, and until lately its cheapness, which rendered it unnecessary for the private user to pay any attention to emulsion making, and, secondly, it is a long process and involves many difficulties. The plates have, indeed, been improved of late years and the plate-makers have their own secrets, but save for an occasional note on some addition to secure orthochromatic qualities, little of any importance has been published.

I propose to demonstrate the making of an emulsion and to show that it pays to make one's own emulsion to produce a few plates, and at the same time affords the opportunity for experimenting, which was my own object in taking up the investigation. I wished to try the effect of adding various substances in the compounding of the emulsion, and also to see if an unwashed emulsion exposed wet would be suitable for lantern-slide making purposes.

I take thirty grains of sheet gelatine such as is used in making jelly, soak it well in distilled water for two or three minutes, and pour away the water to get rid of dust and soluble matter. It is placed in an ordinary bottle and made up to one and a half ounces with distilled water, and steamed in a Welbank boilerette until thoroughly melted, and is then filtered.

While the melting is taking place I weigh out two grams, or thirty grains, of silver nitrate, place it in a test-tube and cover it with a little distilled water. To prevent the silver nitrate attacking the gelatine it should be acidified with one to two drops of pure nitric acid of ten per cent strength. Two drops are, perhaps, more than enough, but it is best to err on the side of having too much rather than too little.

The bromide I prefer to use is the ammonium salt, as I think it is better suited for the wet emulsion than potassium bromide. The weight of bromide theoretically required to convert the slver nitrate into silver bromide and ammonium nitrate is insufficient, and gave me an insensitive emulsion and much fog. I found by trial that about six per cent over the theoretical quantity was necessary.

I take one and a quarter grams, or nineteen grains, of ammonium bromide and dissolve it in a little distilled water.

The melted gelatine is divided in halves in two beakers or measures, the silver nitrate is added to one and the ammonium bromide to the other, thoroughly stirred or shaken up, being warmed if necessary, and the two are slowly mixed with continual shaking. This mixing must not be done in a white light. As the emulsion is very slow, I find that a lamp screened with naphthol yellow and orange gives a good light and is quite safe.

When an emulsion to be used dry is being made, it is said to be customary to boil for three-quarters of an hour, pour into a flat dish, allow to stand till set, then squeeze through canvas into water, wash in several changes for from six to twelve hours, drain from the water, treat with alcohol and

again re-melt with a proportion of water added. The object of the washing is to remove the potassium or ammonium nitrate, which would otherwise crystallize out on the surface of the plate.

I propose to shorten the process this evening, as the plates are to be exposed wet, and no crystals will form.

In the first place, I shall add to the warm emulsion four one-hundredths grain of iodine dissolved in alcohol in order to get a clean working plate. I shall then boil the emulsion for ten minutes. If the boiling is continued for a longer time, the emulsion will be faster, but will not set at the temperature of this room, sixty-eight degrees Fahrenheit.

When the creamy emulsion in the beaker or bottle is removed from the boilerette it is full of bubbles, and must be filtered. To do this we take a little plug of cotton-wool wetted with distilled water, placed in the neck of a funnel, and allow the emulsion in the warm state to pass through. This will remove most of the bubbles and the remainder will be got rid of by adding from twenty to thirty drops of pure alcohol, which also facilitates the coating of the plates.

A small teapot is commonly recommended for holding the emulsion during coating. As you see, I am using a more primitive vessel—a lipped beaker. The emulsion is poured on at one end of the plate, which is tilted from side to side until evenly covered, and is then laid on a cool slab to set.

Having coated some plates, and while waiting for them to set, the lecturer said that the emulsion described would cost twopence for sufficient to coat between two and three dozen lantern plates, the bulk of the twopence being for silver nitrate. The cost of glass would be extra, but most of his audience would have by them waste negatives and slides which would only require cleaning. This he did by boiling them in soda water, washing them in tap-water, and soaking them in a ten per cent solution of nitric acid.

He had been working during the winter at a temperature of forty-eight degrees Fahrenheit. In the summer time it would be necessary to use a harder gelatine or to use ice to lower the temperature of the cooling slab, otherwise the emulsion would not set.

Proceeding to expose and develop one or two of the plates made, he said the speed of the plate would be about five H. & D. He had brought with him a filament lamp, but he understood that the electric current as supplied to the society was at a lower voltage than at his home, and the exposure would be largely guesswork.

It was found that the emulson on the first plate was barely set, and ran during the exposure. The second plate was set, but the exposure given was rather short.

He commonly used, he said, pyro-ammonia as the developer in cold weather and diamidophenol in the summer.

The coating of paper with the same emulsion was, he said, very simple, although he wasted a good deal of time over it at the beginning of his experiments. He had first tried Whatman's drawing paper, which cockled up on the slightest provocation and was very absorbent. After many trials he used an ordinary parchment writing paper. He made a frame the required size, squeezed the thoroughly wetted paper on the bottom of it, and coated in the same way as plates He diluted the emulsion with an equal quantity of gelatine solution, added a little more alcohol, and coated at a lower temperature. The great sources of trouble he found were bubbles, not in the emulsion, but from air in the paper. As soon as the emulsion was set he transferred the paper, face upward, to a sheet of waxed paper, which he pinned to his easel, thus giving himself a safe margin to handle without having to touch the emulsion. A number of enlargements made on the home-prepared paper were passed round.

Some Misconceptions In the Use of Light Filters In Multiple

A very remarkable article, by William Hood, appears in our contemporary, *Camera Craft,* upon the subject of using ray-screens or light-filters in multiple. As it is accompanied by some very excellent photographs, which, to all appearance, serve to confirm the author's very extraordinary theories, we feel it desirable to go into the matter somewhat in detail.

The question of the action of several light-filters, when used together, has often been discussed, and many strange theories have been put forward. Thus, it has been argued that two five-times screens used together make a ten-times' screen, and also that they make a twenty-five times' screen, the latter being apparently the opinion of Mr. Hood,

though the fallacy of the assumption has long ago been pointed out by Dr. Mees, and others who have made a study of the action of light-filters, and not relied on paper theories alone.

Mr. Hood says, "if the eight-times' screen and a ten-times' screen are used together, the time of exposure must be eighty times as long as if no ray-screen were used". He bases this conclusion upon "the fact that if light passes through any transparent or translucent substance by which its amount is reduced, the remaining light on passing through another piece of identical substance will be reduced in the same proportion". This last is a perfectly correct statement, which a more logical person would have at once perceived upsets the former one, as regards filter screens, altogether. One would have thought it evident that the essential function of a filter screen is to filter the light, stopping out certain wave-lengths only, but transmitting the rest, just as a filter-paper stops solid particles, but lets fluids through. It follows then that the general rule given by Mr. Hood can only apply to such wave-lengths as are stopped by the filter and not at all to others, which are not hindered. It will apply in its entirety to neutral-tinted screens which stop all wave-lengths impartially, but it is obvious that such a screen is not a filter at all, and can have no effect on gradation or color rendering. All it can do is to prolong exposure, and when we go into Mr. Hood's figures it becomes evident that his piling up of filter upon filter in the long run simply results in an enormous and quite unnecessary prolongation of exposure. In one case, for example, he uses two seventeen-times filters, one sixteen-times and one four-times filter all together, the result being, from his calculations, an eighteen thousand, four hundred and ninety-four-times filter. To anyone acquainted with the elements of orthochromatic photography such a thing is ridiculous, for even a Wratten G filter, which is capable of producing strong over-correction, has a factor of less than one hundred on an orthochromatic plate, and one of only eight on a panchromatic plate. Anyone knowing what this eight-times filter will do on a panchromatic, and further realizing the abnormal results produced by a three thousand-times infra red filter on a spectrum panchromatic plate, can realize the absurdity involved in speaking of an eighteen thousand-times filter.

A clue to the mystery is to be found in the fact that Mr. Hood speaks freely of seventeen-times filters, though he uses spectrum plates with which we may consider an eight-times filter a powerful one. * * * From this, it appears that he is using filters that have so much general absorption that the rule applying to neutral filters fits more or less well, while it is also obvious that so far as their color-correction goes, all that they can do in this way could be effected with a much shorter exposure. It should be clear that color absorption ceases when there is no more color to absorb, and if we have a filter absorbing ultra-violet and violet, and transmitting all the rest of the spectrum, its selective action ceases when there is no more violet to absorb. This matter has been dealt with very clearly in the Wratten book on "Orthochromatic Filters", in which it is pointed out that the increased exposure required for two filters can be found neither by adding nor by multiplying the separate factors. The answer must depend on the nature of the filters and on the plate.

Mr. Hood is equally astray in his instructions with regard to making allowance for the effect of the filters on focusing. He suggests that we can focus without the filters and then, if the screens are put behind the lens, increase the focal length by the sum of the thickness of the screens, while if the screens are in front of the lens the focus must be shortened by the same amount. If the screens are divided in equal thicknesses between the back and front of the lens, focus is not effected, all of which information is entirely wrong! Very materially so if three or four filters are to be used together. Assume that the screens have a total thickness of one-quarter inch. If behind the lens, the focus is thrown back not one-quarter but one-twelfth inch, that is one-third the thickness of the screens. If in front of the lens the effect is virtually that of removing the object one-twelfth inch further away, which will only necessitate racking in the camera for a fraction of one-twelfth inch, or, in most cases, for a quite negligible distance. It would be difficult to realize why Mr. Hood did not discover his allowances to be utterly wrong, but for the fact, revealed by the particulars he gives, that he evidently

favors small stops. In the six results he shows two are produced with f-16, two with f-32 and two with f-45, so the depth is considerable.

It will perhaps be interesting to quote his details in the case of one very ordinary type of subject that most of our readers have had to deal with at times. It is a woodland scene, taken under trees through which gleams of sunlight are percolating. The time is midday in October. The actinometer time (Wynne presumably) is eight seconds. A seven and seven-eighths-inch lens at f-16 is used, and a spectrum plate, of Wynne speed 192. The filters are two seventeen-times, one sixteen-times, and one four-times, which, by Mr. Hood's method of calculation, together make an eighteen thousand, four hundred and ninety-six-times filter. The manner in which from these data he arrives at the exposure is not exactly clear, but the final result gives an exposure of no less than twenty-six minutes and twelve seconds. Calculating, by Wynne, the exposure for such a subject for a plate of this speed used without a filter, the time works out at just about one second. Mr. Hood gives about one thousand, five hundred and seventy-two times as long, so apparently he allows less for the effect of the filters than his theory suggests, but still much more than can possibly be necessary.

Color Screens and Definition

One of the objections which have been raised against the use of light filters is that they are apt to interfere with the quality of the definition, so that a negative obtained by means of one of them will be wanting in fine detail. That this often is so anyone who sees much amateur work soon learns; but the loss of definition is not inherent in the use of a color screen, nor is it even due to the use of a cheap one instead of a screen with optically worked surfaces. It is caused by a failure to recognize the conditions of fine definition and to use the screen properly to secure them. The subject was discussed incidentally at a recent meeting of the Royal Photographic Society, and several interesting points were mentioned.

Difficulty with the definition is not likely to arise at all in the case of the ordinary short focus lenses, which are in most general use; it is when long focus, large aperture lenses are used, and particularly in the case of telephoto instruments, that certain precautions have to be observed if the definition is not to be impaired.

A color screen may affect definition in several ways. If the lens is not very fully corrected for color, the light passed by the screen may come to a different focus from the visual light used for focusing, and so the plate may not be actually at the position of finest definition, no matter how carefully the focusing has been done. This has given a good deal of trouble in three-color work in the past, where light filters are used which cut out large regions of the spectrum entirely. It was not merely that the picture had to be focused with the screen in position, but it had to be separately focused for different screens, and this introduced difficulties in getting all three negatives identical in scale, so as to register properly. To meet this, lens makers designed patterns in which the secondary spectrum was very fully corrected, and the trouble was thus overcome. It should be mentioned that this particular difficulty is not removed by the use of a very thin light filter.

Another way in which the color screen may affect definition is by altering the focus of the lens for all parts of the spectrum. The glass of the screen acts as a magnifier or supplementary lens, of a weak kind perhaps, but enough to affect the focusing. Even if it is optically flat, if it is introduced between the lens and the plate it will have the effect of displacing the focal plane to an extent equal to the thickness of the glass of the screen. This can be allowed for, and gives no trouble if we are careful always to do the focusing while the color screen is in position.

There is a third cause of poor definition, and that is an irregular action, owing to the screen not being quite flat and of equal thickness throughout. This is the most serious fault of all, as it is not to be remedied except by an alteration in the screen itself. Even carefully selected patent plate glass is not good enough when the conditions are very severe, and the glass used must be optically worked. Nor is it enough to obtain an optically worked screen; it must be fitted correctly, and must be free from any strain likely to interfere with its figure. Dr. Mees pointed out several years ago in this connection that the mere coating of the glass

with a film of gelatine was sufficient to destroy its flatness—the gelatine as it dries contracts and so pulls the glass as to give its coated side a concave form; and he described the methods which he had devised to overcome this.

For ordinary work one can form a very good idea of the flatness of a screen by observing the reflected images of some straight edge, looking obliquely at the glass. This is the way in which a piece of patent plate is generally selected: but at the R.P.S. Mr. Ferguson described a finer test. To make this, a distant object, such as a church spire, is carefully focused in a telescope, and then the glass plate or the color screen is put in front of the object glass. If the screen was really flat, the spire could be seen just as well as before; whereas if there was anything wrong the spire would appear confused or slightly distorted.

Much of the difficulty in the use of a color screen in such conditions as we are considering can be overcome by doing away with the glass altogether and using just a thin dyed film; and Major Campbell, at the meeting referred to, said that in his opinion a gelatine filter placed at the iris diaphragm or thereabouts was best: it did not affect the definition to any extent so far as could be discovered, and could be used with different lenses. This form of screen has the advantage also that it is very cheap: and, so far as we can see is open to no objection, except that the film is quite unprotected and so has to be handled carefully.—R. C. B., in *Photography.*

Reducing Bromide Prints Dry, Without Abrasion

Hitherto it has not been a practical proposition to attempt much in the way of local reduction on bromide prints, except in the case of large areas which could be treated with reducer whilst the print was wet, and those small blemishes which may be removed on the dry print by abrasive methods. The reasons for these limitations are that all the reducers recommended have been in watery solution, and if applied to a dry print are consequently liable to cause a surface mark. Moreover, if so used, even at the risk of surface marks, it is obvious such use must be extremely limited owing to the necessity of washing off after the first application. On the other hand, if used on a wet print, the reducer rapidly spreads, and its effect can neither be estimated with certainty nor can it be localized.

The recognition of these facts led the writer to the conclusion that if some reducer could be found which was soluble in alcohol or acetone, for example—some liquid, that is to say, for which gelatine has less affinity than it has for water, but one which quickly evaporates, and yet lasts sufficiently long and is sufficiently mobile to penetrate the film—these difficulties would vanish; and it would be possible to carry out reduction with a brush on the dry print to an unlimited extent.

Methylated spirit naturally suggested itself as the most suitable liquid. Acetone, owing to the difficulty of obtaining it at the present time, has not been tried. Very few chemicals used in reduction are soluble in methylated spirit. In fact, the list consulted showed only two, iodine and potassium cyanide; and, as luck would have it, these are the very two chemicals one would have chosen. For iodine and cyanide together make an absolutely non-staining reducer, and one which has long been regarded as the ideal reducer for bromide prints.

Experience soon showed that a solution of iodine and potassium cyanide in spirit acted exactly as was anticipated, provided the spirit was not stronger than about seventy-five or eighty per cent. It was also found necessary that a little potash or ammonia should be present to prevent the formation of blue iodide of starch, which otherwise would result owing to the presence of starch in the paper. A satisfactory solution was prepared as follows:

A: Iodine .....12 grains
Potassium iodide ..... 6 grains
Rectified spirit ..... 1 fl. ounce

This is practically the tincture of iodine of the "British Pharmacopoeia".

B: Saturated solution of potassium cyanide in pure rectified spirit containing about twenty-five per cent of added water.

Cyanide is, of course, a powerful poison, and must be treated as such.

C: Strongest solution of ammonia.

This is the ammonia .880 of the "Pharmacopoeia". All these should be kept in well-stoppered bottles.

The working solution is prepared as fol-

lows: One dram of A is taken, and B is added until the iodine is decolorized, and about as much additional B is poured in to make the cyanide in excess. Then half a dram of C is added, or sufficient to prevent the solution giving a blue stain on paper. The total quantity should measure about four or five drams, that is, the quantity of cyanide solution required will probably be about three drams for each dram of iodine solution. Cyanide, however, is of rather uncertain strength, and at present it is not possible to make the formula more definite than the above.

The solution must be further diluted with spirit in order to moderate its action for delicate work. Whether the mixed solution will keep for any prolonged period cannot yet be stated, but so far the mixed solution appears gradually to deteriorate. The solution should be water clear and colorless.

The dry bromide print, which may be in black and white, or even sulphide-toned, is pinned to a drawing board, and the solution applied with a suitable brush to the parts it is desired to lighten, the strength of the solution being reduced with a little methylated spirit for parts in which the gradation is very delicate, or which only require extremely slight reduction.

The action of the reducer must be watched, and as in some cases a few seconds only is the time required, there must be at hand, in fact, in the hand, a small bit of cotton or lint moistened with methylated spirit, which must be passed over the part the instant the action is seen to be sufficient, or rather, perhaps, slightly before it is deemed sufficient. This is followed by a wipe with a dry cloth, and the part is at once ready for a further application of the reducer, if required.

Since the action can be so quickly repeated without injuring or affecting the film in the slightest degree, it will be recognized that repeated action with a diluted solution is preferable to running the risk of over-reduction with a strong one. On the other hand, a slight touch with strong solution is sometimes indicated. A few trials will enable anyone to master the technique. The artistic side of the process—that is, the knowledge as to what to lighten—is another matter altogether, and is outside the scope of this article.

The most suitable brushes are sables as used for oils, not the water color variety. In Winsor and Newton's Series 51, the No. 00 or 0 to No. 3 or 4 is useful. For large areas a camel-hair brush may be used. The sables should be well rinsed in methylated spirit when laid aside.

It must not be considered that this process is recommended as a substitute for spotting the negative, or removing blemishes which it is known from the outset will have to be removed, although it is very useful in these directions. The value of this method of direct reduction on the print is rather in the great ease with which it enables the artistic worker to attain an extreme degree of refinement which could only be reached by indirect methods after many laborious trials. To the photographer accustomed to the limitations of bromide work, the power which it gives appears as something almost uncanny.

An obvious use for the reducer is in making an enlarged portrait from a small original. The picture "An Italian Boy," on the previous page, is from a half quarter-plate full length figure taken with the reflex hand camera, and in the ordinary way the face would have called for a considerable amount of skilful retouching. As a matter of fact, the negative was not touched. All the work on the face which would otherwise have been done by retouching was done on the print itself with the dilute solution. The background also, so far as the reduction of the darks was concerned, was done with the solution, in this case full strength. Of, course, in a background like this there is a considerable amount of after work with brush and pigment, which is really complimentary to the process of reduction. In a future issue, with the editors' permission, I may deal with a method suited to those who have no technical skill in the use of brushes.

A more ordinary use for the solution will no doubt be found in cleaning up foggy prints, the edges of postcards, or prints which are often fogged through the paper being old or kept under unsuitable conditions; probably also in cleaning up vignettes it may be useful.

It may also be used for negative work, but, owing to the thicker coating of gelatine, not quite with the same facility as on bromide prints.—T. H. Greenall in *Photography.*

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Making Good Portraits

The average amateur, judging from his queries concerning the proper lens and other equipment, labors under a wrong impression as to what makes for a good portrait; rather, what makes for what they call and recognize as roundness and modeling in a portrait. At least, in the case of small heads, the lens has very little to do with it. It all depends on the lighting. A properly lighted head will have roundness and modeling, be it photographed with a Brownie or with the most expensive large portrait lens. A fair sized head photographed with a fair sized lens with a fair sized stop may look entirely too "wirey" to be satisfactory, showing skin texture, freckles and the like, much too sharp; but with proper lighting the modeling will be all that one can desire. Overcoming the sharpness can be done by interposing, when printing, a sheet of glass or gelatine between the paper and the negative or by making the image a little out of focus in enlarging. But no lens can convey the quality of roundness if the lighting is flat or otherwise unsatisfactory. The beginner should, before he tries to improve his portrait work by purchasing a special lens, learn to get the proper lighting on the subjects that he essays. A good way to do this is to experiment with some patient and obliging friend; and, if one such is not available, get a cheap plaster cast of a head and shoulders and experiment with that, perhaps staining it a dull buff tone in order to get away from its glaring whiteness. And it is not necessary to make so many exposures as one might imagine. Studying the effect on the groundglass will generally suffice; and later, as one continues the study he will find that he can "see" the lighting, see the disposition of the light and shade, and even recourse to the focusing screen will be unnecessary. Of course, one must first know something about the proper distribution of light and shade on the face to produce the modeling he wants. Take one of the heads engraved on our paper currency and try to duplicate the lighting. Notice that there is no absolutely white or absolutely dark portions; that the face is never divided absolutely equally as to light and shade, that the highest light is on the temple, on one side; that all the shadows fall across the face at an angle of about forty-five degrees; that the shadow of the nose, doing the same, just meets the corner of the mouth; that the chin, while a protuberance that catches the light, does not do so to the same extent as does the cheek, which last, in turn, does so less than the temple, and so on. Once you can so manipulate your lighting, by placing the sitter in the right position beneath it, by softening it with a screen if too harsh and by using a reflector on the shadow side if too unequal, as to produce a portrait of this kind, the standard portrait lighting, you will be in a position to attempt variations. Later, you can interest yourself in the slight modifications that different types of lenses will give.

Making a Comparison

We often find a worker quite sure that he has determined which is the best of two plates, two papers, two developers, or even the best of several, by actual use; and yet, he has done nothing of the kind. He has used a certain brand of plates for quite a period of time, when someone or some circumstance causes him to try another brand. The results are such that he feels quite sure that the new plate is much better than the one so long used, and a change is made. But there has been no actual comparison. The better results may quite likely have been due to a combination of favorable conditions that would have operated just as well had no change in plates been made. If an actual comparison is to be made, one of each of the two brands of plates under consideration should have been exposed on the same subject under identical conditions and then

given the same treatment in development. Even then the comparison may not be a fair one, as the developer used might be better suited to one plate than to the other. What the worker really wants to know is which plate will give him the best results with his own particular method of working. If he feels like mixing up the developer that is recommended by the manufacturer of both brands, well and good; he can make the comparative exposures and develop them separately in their respective developers. The idea is, however, that a test, to be any test worth considering, should be made with every variation in condition except that of the brand of the plate, eliminated as far as possible. Then and then only will any variation in the result be somewhat due to a variation in the quality of the plate, paper, or whatever it may be under examination. And then the experimenter has only determined which is the most suitable for his own method of working. The plate that gives one worker the best results may do exactly the opposite in the case of another. The personal equation enters into the question of the satisfactory working of different photographic products to such a great extent that it must be reckoned with in nearly all cases.

Saving Hypo

A correspondent writes to ask if there is any objection to using the hypo bath in which prints have been fixed, for fixing plates. The plan is an excellent one for two good reasons. It economizes hypo and it enables one to discard, without feeling that he is extravagant in the matter, a print-fixing bath of which he is not quite sure as to its fixing quality. Put in the fixing tank for plates there is no risk of its not working properly for the reason that he can always see when the plate lacks being fully fixed, something not so easy to determine in the case of a print.

Finding the Focal Length

In reply to an Ohio correspondent, we would suggest a plan recommended in a recent issue of the *Amateur Photographer,* described as follows: To verify focal length, put two lighted candles with their flames, say, thirty inches apart against a darkish wall background, put the camera midway between the candles, with the focusing screen ten and one-half feet, one hundred and twenty-six inches, away from a point midway between the candles. Focus sharply for the candle flames and measure their distance apart on the groundglass, say three inches. Divide object thirty by image three, getting ten, which call the "ratio" or *r.* Now multiply object-to-image distance one hundred and twenty-six by *r* or ten, result one thousand two hundred and sixty. Now add one to *r,* making eleven; square this, getting one hundred and twenty-one. Finally, divide one thousand two hundred and sixty by one hundred and twenty-one, getting ten and four-tenths, the focal length of the lens. This method is quite simple in practice, yet but seldom mentioned.

Hydroquinone Solution Turning Brown

In answer to an Ohio reader: Hydroquinone, in the solid state, or as it comes in the package or bottle, is only very gradually affected by the atmosphere; and, while it may become slightly brown, its strength diminishes but little if at all. In solution, it oxidizes much more rapidly if exposed to air, turning first yellow and then brown. This is all the more rapid if the solution contains any alkali, and this last often happens, even when only sulphite of soda has been used in making up the solution, through the latter containing an impurity of an alkaline nature. Mixed up with a perfectly pure sulphite and a little acid,—just enough to assure the absence of any alkalinity, the solution should, if well corked, keep for an extended period. The necessary alkali solution should be kept in a separate bottle and added as the developer is required for use.

Time of Tank Development

An Illinois correspondent wants to know if the time of development in a tank, the temperature being constant, is the same for all kinds of plates. It is not; the fastest plates or films requiring about double the time of the slower brands. The time given with the formula may generally be assumed to be about right for the most commonly used plates. A very slow emulsion will require quite a little less, say from twenty to thirty per cent; while an ultra rapid plate will require somewhat more, perhaps ten or fifteen per cent. For this reason it is not advisable to develop very slow and ultra rapid plates for the same length of time.

INTERNATIONAL PHOTOGRAPHIC ASSOCIATION

I. P. A. Lantern Slide Interchange

The Eastern Division of the Lantern Slide Interchange is receiving the best of support, some twenty-five or more active workers now being enrolled. It has been necessary to send back to their makers several lots of slides, due to lack of quality, but in every case the member sending them has been found anxious to co-operate in securing a high standard of work by making them over and of better quality. The first circulating set is complete and on Monday, January twenty-first, was shown to the employees of the Sherwin-Williams Company, who expressed their appreciation and interest in the beautiful work. The second set is well under way and will start on its rounds as soon as completed. Mr. Farrow, the director, goes on to say that there is, of course, a lot of work and some expense attending his activities, but he feels that the pleasure the work has given him has well repaid him for his efforts.

Mr. Davies, who has charge of the Western Division reports his set practically ready to go forward, one or two members being rather dilatory after promising their slides. He suggests that our Pacific Coast members interested in lantern slides should not miss this opportunity of seeing both the Eastern and Western sets but at once send in five of their own slides for the latter.

Officers of the I. P. A.

F. B. Hinman, President, 1369 South Washington St., Denver, Colo.

J. H. Winchell, Chief Album Director, R. F. D. No. 2, Painesville, Ohio.

Fayette J. Clute, General Secretary, 413-415 Claus Spreckels Building, San Francisco.

John Bleseman, Director Post Card Division, Hemlock, Ohio.

James B. Warner, Director Stereoscopic Division, 413-415 Claus Spreckels Building, San Francisco.

NOTE.—All stereoscopic slides sent to Director for the circulating sets must be mounted, titled, and show the maker's name and I. P. A. number on the back of mount. Notify the Director how many mounts can be used, and a supply will be sent you by return mail.

A. E. Davies, Director Lantern Slide Division, 695 61st St., Oakland, California.

Arthur H. Farrow, Secretary Lantern Slide Division, 51 Richelieu Terrace, Newark, N. J.

NEW MEMBERS.

4450—F. P. Fox, Ambrose, No. Dak.
Vest pocket, 2½x4¼ speed and 5x7, various papers, of baseball pictures in action and views of interest; for scenery, water scenes, and views of interest. Prefer 2½x4¼ prints. Class 1.

4451—Harold A. Bellin, 103 Westminster St., Providence, R. I.
Lantern slides; for the same. Class 1.

4452—Wallace R. McBlain, Lock Box 365, Eldon, Iowa.
2¼x3¼, 3¼x4¼ and 4x5, developing papers, of portraits of people and children and general snapshot and time exposures; for the same. Object in exchanging is to better my own work, and if my prints do not prove satisfactory, I will return all prints taken in exchange. Class 1.

4453—Virgil Wagner, Route 1, Box 23a, Omak, Wash.
Class 2.

4454—Mrs. Bertha Miller, 840 Haring St., Cadillac, Mich.
3¼x4¼ and 3¼x5½, developing papers, of miscellaneous subjects, some interesting cloud effects, also fruit pictures; for anything of general interest, particularly artistic landscapes, marine and animal pictures. Class 1.

4455—James Dunlop, Route A, Box 43, Placerville, Cal.
Class 2.

4456—Harry J. Fromm, 170½ Catherine St., Elizabeth, N. J.
4x5 and smaller, also post cards, developing papers, of marines, railways, portraits, landscapes and buildings; for same, especially home portraits and accidents, wrecks, fires, etc. Class 1.

4457—Glenn L. Gebhardt, Box 129, Carbondale, Colo.
Class 2.

4458—Andrew M. Kopcock, 3040 Clark Ave., S. W., Cleveland, Ohio.
2¼x3¼ and 3¼x5½, various papers, of snow scenes, marines, landscapes, river scenes, street scenes, and children; for any kind, good work only; single weight paper, any color. Class 1.

4459—Louis M. Rommel, 1516 E. Franklin Ave., Minneapolis, Minn.
3¼x4¼ and 5x7, printing-out paper, of waterfalls, scenery and historical buildings; for the same. Class 1.

4460—Harry T. Kanda, P. O. Box 67, Gardnerville, Nev.
4x5 and 5x7, various papers, of portraits and landscapes; for the same. Lantern slides only, all kinds. Class 1.

4461—William P. West, 2707 East 4th St., Long Beach, Cal.
3¼x4¼ and 5x7, various papers, of mountain and beach views, also beauty spots in Southern California; for landscapes, views, and interesting places. Class 1.

4462—Edgar M. LeBaron, P. O. Box 48, Mesa, Ariz.
Any size up to 8x10, various papers, of cactus and Arizona scenes; for figure studies. Class 1.

4463—S. Maas, 831 So. Delaware Ave., Tampa, Fla.
Class 3.
4464—John W. Metsker, 221 W. Larwill St., Wooster, Ohio.
Class 3.
4465—J. A. Currie, 535 40th St., Oakland, Cal.
2¼x3¼, 1⅝x5½, and 5x7, various papers, of beach scenes, Honolulu and Canadian scenes, steamer scenes and art studies; for art studies, beach scenes, foreign scenery, etc. Send sample of your work. Class 1.

RENEWALS.

188X—Edward Truman, Burton, Ohio.
Class 2.
2500—B. P. Angle, Augusta, Wis.
Any size up to 5x7, various papers, of home portraits, general views, and some scenic views; for home portraits, general views, and anything artistic or interesting.
Class 1.
2835—Frank M. Remster, 69 Myrtle St., Bridgeton, N. J.
Class 2.
2885—George Macaulay, 167 Allen St., New Bedford, Mass.
3¼x4¼, developing papers or post cards, of marine and miscellaneous views, also a few speed views; for views of interest; especially mountain views. Good Work only.
Class 1.
3227—V. Rose Huff, Chagrin Falls, Ohio.
Prints, post cards and enlargements, of interesting subjects in good work and prompt exchange. Am a bit partial to marines, animal and child studies; lady members especially invited to exchange. Class 1.
3848—William Charles, Box 33, Basom, N. Y.
5x7 and smaller, developing papers, of landscapes, outdoor sports and figure studies; for anything interesting. Class 1.
3852—J. W. Jeffers, Henry Clay Fire Insurance Building, Frankfort, Ky.
Vest pocket, 3¼x5½, 4x5, 4¼x6½, 5x7 and 6½x8½, prints and post cards, developing papers, of landscapes, nude of children only, genre and pictorial work; for the same.
Class 1.
4001—Fred Weidmann, 1692 Second Ave., New York City.
Class 2.
4163—C. A. Heald, R. F. D. Box 26D, San Dimas, Cal.
Class 2.
4296—Jesse B. Hastings, Stony Point, N. Y.
Class 2.
4311X—P. A. Anderson, R. F. D. No. 1, Box 32, Joice, Iowa.
3¼x5½ and 5x7, of farm scenes, buildings, wild animals, birds, also a few speed pictures. Only good work will be sent and accepted. Post cards only. Class 1.
4314—W. E. Bowman, Dayton, Wyo.
3¼x5½, 5x7 and 6½x8½, single weight prints, of all kinds of views; for views, character and figure studies. Class 1.
4364—S. A. Schwarz, 590 West 172nd St., New York City.
2¼x3¼, 3¼x4¼, 4x5, 5x7, 6½x8½ and larger, various papers, of portraits, genre, landscapes, etc.; for the same. Only first class work sent or accepted. Class 1.

CHANGES OF ADDRESS

3085—Thos. W. Bradt, R. R. No. 4, Aylmer (West), Ontario, Canada.
(Was Bethany, W. Va.)
4049—Robert S. Blatchford, Magdalena, New Mexico.
(Was Reserve, New. Mex.)
4190—Harold A. Smith, 745 N. Monroe St., Stockton, Cal.
(Was Montello, Nev.)
4312—J. Leo Hafen, Farmington, Utah.
(Was Arco, Idaho.)
4346—E. McClymont, P. O. Box 522, Toronto, Canada.
(Was 202 Robert St.)
4351—C. H. Knowlton, 1932 University Ave., Berkeley, Cal.
(Was Vallejo, Cal.)
4418—W. S. Wilgus, 265 No. Meyer St., Tucson, Ariz.
(Was Bisbee, Ariz.)
4436—O. K. Brewer, P. O. Box 264, Fayetteville, Ark.
(Was Neosho, Mo.)

OUR BOOK SHELVES

A New Book on Canada

The recent press stories of the alleged activities of Canadian farm owners to attract American labor across the border, have centered interest on a district which is most ably treated in Archie Bell's new book, "Sunset Canada: British Columbia and Beyond", which The Page Company will add to its "See America First", Series next month. In this book Mr. Bell predicts that Canada will, in the future, supply the world with fruits, so favorable are conditions there for the production of this, as well as other kinds of edibles. In former days the British Columbia ranch was catalogued by the reading public as the place where the "younger son" of the typical English novel took refuge, invariably, in financial misfortune, but there will be a much sharper interest in this section as a possible "drawing card" for the none too numerous American farm workers.

Interest In the Latin Republics

That the people of the United States have a keen interest in their predicted trade supremacy over Germany in the Latin countries of America after the war, is indicated by the brisk demand for books about the lands and peoples destined to furnish us such profitable future markets. The Page Company, in answer to the demand, is about to issue revised versions of two of the volumes in its popular Latin Republics of America Series, "Brazil and Her People of Today" and "Mexico and Her People of Today", both the work of Nevin O. Winter. Evidently there is to be real preparedness for the trade war!

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

E. M. Hammond of Porterville has been in Herington, Kansas, since Christmas, visiting his parents and showing the youngsters some snow.

I. E. Wallace, formerly of Hefton Drug Company, Hanford, is now with Wright Brothers of Selma, California.

If D. M. Bain, formerly of Fresno, reads this item, let him send his address to the writer who has some good news for him.

Nathan Reiman has opened a kodak finishing plant in Stockton.

V. Covert Martin has his new studio in Stockton now running in full form.

Powell of Hanford was in San Francisco early in February, buying for the re-opening of his new studio, his former one having been dstroyed by fire on December fifth last.

Miss Lee and Miss Schwarz are holding the fort together at Bullock's, Los Angeles.

H. A. Parker of Pasadena is thinking of adding another girl to his place.

W. S. Valentine of Redding visited the city on a vacation early in February.

Eastman School Temporarily Discontinued

Some years ago the Aristo Professional School was started in a small way, its purpose being to assist the professional photographer in the latest and most approved methods of handling the American Aristotype Company's products. This name was afterwards changed to the Eastman School of Professional Photography, and each year its scope has broadened and enlarged, until in 1917, almost every step of the professional photographer's work has been covered. Showcase displays, salesmanship, accounting, posing, lighting, developing, retouching, printing, enlarging, mounting, short cuts, new money-making ideas—all these, and, in the last few years, the addition of commercial photography have enabled those attending the schools to keep thoroughly posted in the latest and best photographic methods.

The appreciation of the school by the professional photographer is fully realized, but it requires transportation for five or six tons of apparatus, and this must be moved promptly to enable its schedule to be maintained. We all know or should know, how necessary it is for the Government to keep food, supplies and munitions moving, and how severely the transportation facilities of the railroads have been taxed in the last few months. But one thing could be done—give up the school temporarily for the more vital transportation needs of the Government.

It is the right, the logical and unselfish thing to do and we feel sure our readers, much as they may miss the school, will forego the pleasure in the same spirit that has prompted them to have their wheatless and meatless days—to help win the war. The Eastman Company assures us that "After we win this war, the work of the school will be resumed."

Photographing Stopped In Panama Canal Zone

Frank Fonillo, Acting Governor of the Panama Canal Zone, has issued an order prohibiting employees from making photographs which show any part of the restricted area in the canal zone or any of the ships in transit through the canal or at the terminals. Only photographs of a purely personal or family character may be taken in the zone. Employees having previously made photographs in their possession which might reveal anything of value to the enemy are instructed to submit them for censorship before sending any of them out.

The Simplex Print Dryer

A new advertisement this month is that of the Simplex Auto Print Dryer, made by the Simplex Photo Specialty Company of 337-339 East Thirty-fourth Street, New York. Write them or the Pacific Coast

agents, Howland & Dewey Company, 510 South Broadway, Los Angeles, California, for a circular covering this machine and giving a list of some of the prominent users thereof. Until one has used a machine of this kind he can have no definite idea of the satisfaction that it can afford through the saving of time, trouble and space, not to mention the avoidance of the blotter nuisance and other troubles attending the usual method of drying prints. One of these all-steel dryers equipped with a General Electric motor costs something, it is true, but that is soon forgotten with the satisfaction one enjoys in turning out work quickly and in the best possible shape.

An Up-To-Date Repair Plant

S. Slayton, for over twenty years the leading photo-apparatus builder and repairer on the Pacific Coast, is now connected with the repair department of Henry G. de Roos. Mr. Slayton recently returned from the East where he inspected all the modern machinery and apparatus used in camera and shutter repairing, lens fitting and camera building, with the result that the de Roos repair plant is now unequaled by any in the West. The plant has been specially built, and will be operated under the careful supervision of Mr. Slayton, who will continue the manufacture of the Slaflex Focal-Plane camera, extensively used by newspaper photographers. Special machinery for tank manufacturing and other woodwork has been installed, as also a Swan Precision lathe for the most delicate and accurate work. This new department is equipped so as to turn out the finest class of work in the shortest possible time. A cordial invitation is extended to all to call and inspect the plant, the Repair Department, Henry G. de Roos, 88 Third Street, San Francisco.

A Special Announcement

The Central Dry Plate Company of St. Louis is sending out an announcement to the trade to the effect that the constantly increasing cost of material entering into the manufacture of dry plates, together with increased labor cost, compels a slight decrease in discounts, effective March first. In doing this they are passing on to their customers only a fractional part of this increased cost, a part that, while very small to each, will permit the maintainance of the same high quality that has always characterized their products. This, together with their increased facilities will permit of increased efficiency of service; these, combined with the promptitude and courtesy that is extended, should mean much to the users of Central Dry Plates. Dealers who have not been reached with this announcement of the slight reduction in discount should write the Central Dry Plate Company, St. Louis, Missouri, for a copy.

Paco Dryers Winning Success

The manufacturers, in a recent letter, advise that they have completed arrangements with all of the leading photographic dealers throughout the country for the sale of the Paco Dryers, the new model, the 1918, being a decided hit with the trade, as well as with the photographers. The dryer is the result of actual use in the large plant of the manufacturers themselves, and therefore meets practical working requirements with perfect satisfaction. The sales, since the first of the year, the letter advises, have been in excess of their highest expectations; those for the past two months exceeding the sales of any previous period of double that duration. This we are glad to learn for the reason that the Paco Dryers have been advertised quite continuously and consistently in our pages, and we have always taken pleasure in recommending it to our readers. An inquiry addressed to the Photographic Appliance Corporation, 116 South Fourth Street, Minneapolis, Minnesota, will bring descriptive circular.

Use of Victor Intensifier

While Victor Intensifier has no doubt quite a satisfactory sale in the stores, the fact remains that the average worker does not avail himself of the advantages that it offers to the extent that he should. This intensifier comes in powder, as well as liquid form, a No. 2 powder that makes eight ounces of solution costing only thirty-five cents at the store, or five cents additional by mail. The solution can be used over and over until exhausted, a given quantity being sufficient for about fifteen or twenty negatives of the size the solution will properly cover. This intensifier, while giving the greatest possible amount of intensification, can also be employed to secure only a slight increase thereof by cutting short the time of immersion.

It can also be applied locally so as to increase the contrast of certain portions of the negative and is indeed a most valuable assistant in the production of negatives that will give the best possible results. This intensifier is manufactured by the well known manufacturers of flashlight material, the James H. Smith & Sons Company, 3541 Cottage Grove Avenue, Chicago, Illinois, and can be obtained of all dealers throughout the country.

Taking Liberty Bonds In Trade

"I hope that the merchants of the country, upon a more careful consideration of the subject, will discontinue their efforts to sell merchandise and take Liberty Loan Bonds in payment", says Secretary McAdoo.

The Secretary states that he has no doubt that merchants offering to take Liberty Loan Bonds in exchange for merchandise are actuated by patriotic motives, but that such transactions tend to defeat a primary object of the bond sales, as they discourage thrift and increase expenditures. Bonds so taken in exchange in most cases are immediately sold in the open market, which tends to suppress the market price and adversely affects sales of future issues.

The strongest efforts are made by the Treasury Department to have these Government bonds purchased for permanent investment by the people and paid for out of savings, thus not only providing funds for the Government but effecting conservation of labor and material; exchanging them for merchandise therefore defeats this purpose.

"The Eyes of the Navy"

From the Navy Department we are advised that the Navy is still in urgent need of binoculars, spy-glasses and telescopes. The use of the submarine has so changed naval warfare that more "eyes" are needed on every ship, in order that a constant and efficient lookout may be maintained. Sextants and chronometers are also urgently required. Heretofore, the United States has been obliged to rely almost entirely upon foreign countries for its supply of such articles. These channels of supply are now closed, and as no stock is on hand in this country to meet the present emergency, it has become necessary to appeal to the patriotism of private owners, to furnish "eyes for the Navy".

Several weeks ago, an appeal was made through the daily press, resulting in the receipt of over three thousand glasses of various kinds, the great majority of which has proven satisfactory for naval use. This number, however, is wholly insufficient, and the Navy needs many thousands more. The Assistant Secretary, therefore, asks us to cooperate with the Navy, by announcing, in addition to the above general statement, the following salient features in connection with the Navy's call:

All articles should be securely tagged, giving the name and address of the donor, and forwarded by mail or express to the Honorable Franklin D. Roosevelt, Assistant Secretary of the Navy, care of Naval Observatory, Washington, D. C., so that they may be acknowledged by him.

Articles not suitable for naval use will be returned to the sender. Those accepted will be keyed, so that the name and address of the donor will be permanently recorded at the Navy Department, and every effort will be made to return them, with added historic interest, at the termination of the war. It is, of course, impossible to guarantee them against damage or loss.

As the Government cannot, under the law, accept services or material without making some payment therefor, one dollar will be paid for each article accepted, which sum will constitute the rental price, or, in the event of loss, the purchase price, of such article.

An Announcement

Movette, Incorporated, has purchased all the physical property of the Movette Camera Corporation, and is now equipping a new plant, in Rochester, for the manufacture of the Movette devices. A new sales policy, one embracing an exclusive dealer proposition, is under consideration and will be announced shortly. Any dealer interested will do well to address: Movette, Incorporated, Rochester, New York.

War Photographer's Ruse Gets Him Out of Prison

It is far from difficult to fool the much-vaunted German secret service, according to Captain Donald Thompson, war photographer. During 1914 and 1915, Captain Thompson, then a press photographer, passed in and out of the German lines constantly, and carried many dispatches for United States

consuls and relief workers in Belgium. The photographs which he took of the Germans proved of value to the British secret service because it located various German regiments from insignia on their uniforms. The Germans decided that Thompson was a spy and posted orders that he be arrested if he returned to Germany.

But Thompson when ready to go back, wrote a story about himself, describing himself as strongly pro-German, carrying an interview with himself in which he said that the Germans had never been guilty of atrocities, and he strongly attacked the English. The article further said that the British were lying when they said that his pictures had been of value to them. This article was set in type and a proof pulled beside the advertisement of a New York department store. Over this was run a head of *The Brooklyn Daily Chronicle,* a paper which does not exist.

This proof was torn out carelessly to represent a clipping from an American paper and folded into Thompson's pocket. He then marched into the German lines. He was promptly arrested and thrown into a dingy prison, searched, and all his papers removed.

"Some two hours later", as he describes the incident, "I saw a file approaching the cell door. First came a sentry with a lantern. An officer followed him and behind came orderlies bearing a basin of warm water, clean towels, sandwiches, beer and cigars. I knew then that they had fallen for my bluff.

"I was released with profuse apologies, given the freedom of Germany and dined and wined by notables of Berlin. The German government gave me considerable money to expend for them in propaganda work. This went far towards paying my expenses and kept me in spending money for many a day."—*The Detroit News.*

Get Out Some Post Cards

Not a few photographers could add considerable to their income and to their own prestige by getting out a series of local view post cards for sale to the trade in their town. There are also not a few orders that could be picked up for post cards for advertising purposes if the photographer would only be prepared to show samples and quote prices on good work. The Photographic Appliance Corporation, 116 South Fourth Street, Minneapolis, Minnesota, have been turning out photographic post cards of the highest quality for photographers all over the country for a number of years and our readers should get in touch with the firm and see if the facilities they offer would not allow them to increase their business and their profits as well.

The Duplex Rotary Dryer

A new advertisement in this issue is that of the new 1918 model of the Duplex Rotary Automatic Print Dryer, a decided improvement over the machine put out last year, despite the high quality which the latter possessed. The double drums and double, continuously-moving cloth webs or belts, give a degree of efficiency that commends this machine to large producers of photographic prints. Another special feature is the adjustable roll above the print tray which provides for the prints being delivered either perfectly flat or with either a concave or convex curvature, as desired. The machine is of superior design and construction, steel frame and steel tubing rollers,—except the two end rolls for the outer web, assuring solidity and long life. Those interested should write for descriptive circulars to Herbert & Huesgen Company, 18 East Forty-second Street, New York.

Illinois College of Photography

Mr. Shaver, who is a student of the photographic department, demonstrated that he is still a "young Shaver" by catching a case of mumps.

Walter Barg, late of the photo-engraving department, has a position in Chicago. He paid the College a pleasant visit during the five days of Government closing.

Mr. Penglase, class of 1916, passed through Effingham on his way from camp to New York City. He was on official army business, having a group of soldiers in his charge.

Felix Raymer, for many years an instructor in the College, is now in business at Austin, Texas. He has two I. C. P. students in his employ, and would like to have two more.

Miss Evelyn Fox, class of 1915, who has been employed in a studio in Alberta, Canada, for over two years, and whose employer recommends very highly, expects to open a studio of her own in the near future.

No. 4 APRIL, 1918 Price, 10 Cents

CAMERA CRAFT

SAN FRANCISCO
CALIFORNIA

Monomet

The Developer of the Present

MONOMET IS THE ONLY DEVELOPING AGENT IDENTICAL WITH METOL IN RAPID, ENERGETIC ACTION

MONOMET develops in the same time as Metol and gives the same characteristic richness and quality—with a tendency to more brilliancy. This fundamentally essential point many are endeavoring to secure by the addition of a caustic alkali, as an accelerator, to developers of the paramidophenol class—which always tends to rob the print of the typical richness required in prints on developing paper.

MONOMET has been tried out thoroughly in comparison with other modern developers and its results are unquestionably superior.

MONOMET sepias are identical with those produced from prints developed with Metol.

PRICE

One-pound container	$22.50
Half-pound container	11.50
Quarter-pound container	6.00
One-ounce container	1.50

ANSCO COMPANY Binghamton, N. Y.

A PLEASING LIGHTING
By R. C. WARD

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

FAYETTE J. CLUTE, Editor

CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

VOL. XXV APRIL, 1918 No. 4

Flash-Cabinet Portraiture

By R. C. Ward

With Illustrations by the Author

I have, in my travels about, operated in a great number of studios and under all kinds of lights. I have also made the acquaintance of a large number of photographers. These last are continually asking me as to the advisability of putting in a flash cabinet, knowing that, since settling down here in my own studio, I have been an enthusiastic user of such an apparatus for several years. I will, therefore, try to explain the great advantage of a flash-cabinet over the studio skylight, as we all know that the latter works well as long as there is plenty of light, but we are not all quite sure about the flash. Then, when the next man comes along and wants me to write him a ten-page letter and tell him all about it, I can advise him, if he is not now taking CAMERA CRAFT, to send for this particular issue, and in that way save myself a lot of work.

A sitting to be made of one of those over-animated, wiggley, laughing (or crying), babies with which we are all familiar, is a sure shot with a flash-cabinet. With the best kind of a skylight, many a negative that would be fine were it not for a moved hand or foot, has to be thrown into the discard. This is the result of daylight being too slow. There is no trouble of this kind when working with the flash, and around the holidays, just when the photographer has the most work and the least daylight, a flash-cabinet would result in there being a much less number of wasted plates. In addition, the negatives are much more easily retouched, draperies are rendered softer and with good printing quality, and any kind of lighting obtainable under a skylight can be made with a flash-cabinet properly handled. In some cases the customer is afraid of

flash methods, but that can be overcome by having or making a flash-cabinet of large enough proportions to somewhat resemble a skylight, using plenty of light both inside the cabinet and outside in the operating room. Doing this will practically destroy the sudden, flashy effect that is disconcerting to the nervous individual.

One point that comes up most frequently in my correspondence with friends who have just taken up, or are about to take up the use of the flash is: How to get even illumination over a fairly large group with the flash-cabinet. The even illumination difficulty is met by using two flash-cabinets, one at each end of the group, one using a little more powder than the other. In my studio I depend upon my large permanent cabinet for the main lighting and use my smaller portable outfit for lighting from the other end.

Use an extra fast plate to minimize the amount of powder required. I use portrait film, as they yield negatives that require very little retouching or doctoring before going to be printed. The one great advantage of the flash lies in the fact that measuring out the powder measures the light absolutely, insuring the production of a uniform negative every time. There are none of the "miss or hit" variety, as with daylight. When making white backgrounds the head screen should be used for toning down the light on the sitter just the same as with a skylight. The ground should be rather close to the subject, and at such an angle as to receive an even distribution of light over its entire surface.

The whole thing is very simple; one only needs to bear in mind that the front of the cabinet is just the same as a window through which the light reaches the sitter and arrange matters accordingly.

Equipped with a flash-cabinet, one can go into any suitable room, say a ground-floor store, and make the finest work; and in such a room he can do a better business, because the window display can be made so much more attractive and compelling than is possible in the average small doorway leading up three flights of stairs to the studio. Besides, the average person does not care to climb all those stairs. He may not object to shaking hands with the photographer when he gets to the top, but he feels that such a climb entitles him to recognition by some higher being. A profitable plan for the use of a portable cabinet is to have a permanent location in a good sized town with several smaller towns nearby. Set a definite day of the week on which to be in each place, and then take the cabinet and the necessary photographic apparatus there regularly on that day. One can generally rent the necessary space from some well known merchant in each of these small towns. Sometimes this will necessitate the moving, temporarily, of a few boxes and the like, but your being at his store will help his business, as well as your own.

Make only the sittings at these one-day stands that make up the round of towns. Do all the finishing at the central studio, delivering the pictures either from there or on the next weekly round. A portion of the show window can be secured for a continued display of pictures, a neat, small sign, announcing that the photographer will be there "Every Thursday" or as the case may be. The advantage of this plan is that the proprietor of the store, or his clerks, are always there and can advise patrons concerning one's work and charges therefor,

and this helps to inspire confidence. And this confidence should never be violated. The photographer should treat every customer in such a way that they will be glad to recommend him to their friends during the periods between his regular weekly visits.

At the central studio, the one in the larger town, more elaborate equipment can be installed. One of the best flash-cabinets I ever saw was only a couple of feet deep, but occupied almost the entire space of a small single slant skylight, having the same inclination and looking much like a regular daylight one. Sitters on entering this operating room at night were often a little surprised at first to find what at first appeared to be an ordinary skylight curtained with a tracing cloth front. In my own large front cabinet I use a Cooper-Hewitt mercury tube and four two hundred and fifty watt lamps and these give me exactly the same lighting effect as that of the flash, and their strength makes it as easy to focus as by daylight. There are several good makes of flash-cabinets on the market, those most regularly and consistently advertised in the magazines being no doubt the best. One can, however, build his own if he has any little ability in that line, but doing this last is hardly advisable except as one wishes the cabinet to occupy a certain space permanently, say, a doorway, a portion of the wall between two rooms; or, as I have described, the space originally occupied by an ordinary skylight. The requirements are,

A PLEASING FLASHLIGHT PORTRAIT

aside from the proper height and inclination: a tracing cloth or other diffusing front, a reflector behind the flash, some means of allowing the resultant smoke to pass outside, and a simple, easily get-at-able firing device. Of these last, I have used several; in the main copied, but sometimes removed bodily from some old flashlight apparatus lying about the studio.

The particular firing device I am at present using was made by taking a piece of tin, about four inches square, bending it into a pan-shaped form to hold the powder. To the underside of this is attached a small copper wire, and a like wire is so arranged that its end forms a point that is just above the center of the pan, the height depending upon the strength of the "juice" used. I use six ordinary dry cell batteries for my current, and when the switch is closed the jump spark from the end of the copper wire just mentioned will ignite the powder placed on the tin pan underneath. These dry cells, wired in series, are placed in one corner of the cabinet and connected with the firing point by one copper wire, the other connected with the powder pan below. This last wire passes through a spark coil and then on to the camera, and through the front, with wires so fixed to the shutter that when the latter is fully open, contact is made with the other wire, also in the shutter, and sets off the powder. To avoid the mistake of accidentally firing the powder by opening the shutter to focus after powder is placed on pan, I use a cut-off switch attached to the back of my camera stand, this switch breaking the circuit going to the cabinet so that powder cannot be fired until it is closed. If one is in a permanent location, the wire leading from cabinet to camera can be run along the side wall to two different switch sockets, one placed near the camera position for bust pictures and the other farther away for groups. This avoids having so much wire on the floor, where it will get in one's way when moving the camera back and forth. The flash-pan is arranged on a sliding carrier that permits of its being raised or lowered, or located at any desired point within the cabinet. A small door at the end of cabinet permits me to draw this carrier close to it for reloading, after which it is pushed back to the desired position.

If the pan and wire point are kept clean, one will have no trouble from missing fire. My own cabinet is a large permanent one, ten feet wide by seven feet high, the front taking the form of two cloth-covered doors meeting in the center. These give full access to the inside. A smaller one might do as well, but I have plenty of room and the larger one is more impressive from the sitter's point of view. I have nothing against the flash-cabinets on the market; they are all good, and I only built my own because I wanted something that looked as if it was a part of the room instead of something within it. For my home portrait work, I use a Halldorson machine, using it also in making my round of the nearby towns. Its portability and compactness are valuable features. Victor flashlight powder has given me perfect satisfaction, and I use it exclusively in all my work.

One very important precaution that I must not fail to mention is that of having a good generous hood on the lens in order to protect the front combination from the flare of the flash, which is often just barely outside the field included by the lens. And it is obvious that a hood having square sides is more

of a protection than one of a cylindrical form. The front of this hood should be proportionately the same shape as the plate, so that only the light forming the image is allowed to enter the camera. Another matter that the new worker with the flash is inclined to overlook is the fact that the duration of the flash; about one-twentieth or less of a second, establishes the allowable amount of motion, while the amount of powder used establishes the "time" as regards the negative being under or over-timed. This means that under ordinary conditions the lens may be open for several seconds, yet the negative will record only that expression of the sitter that maintained during the short period of the flash.

A LIGHTING EASILY SECURED

As the distance increases, the powder must be increased, and this matter of distance is not that of distance between subject and camera only. The distance to be considered is that from the flash to the subject added to that from the subject to the camera.

I think this answers about all the questions that have been asked me as to why I am so strongly in favor of the flash-cabinet as compared to the ordinary skylight depending upon daylight for an opportunity to make negatives. With my equipment I am always ready for the sitter who has only evenings in which to dress up and visit the studio. The soldier boy is home on a brief furlough, the daughter has been decked out for a ball, the father never finds time during the day, the mother cannot be spared long enough to "dress up" and go downtown, but with the flash-cabinet and the evenings available, and with a ground-floor studio, because no skylight is required, all these difficulties are removed. There are no dark days, no short days, for the flash-cabinet.

Kite or Aerial Photography

By Isidore Armijo

With Illustrations by S. Parks

An intensely interesting article appeared in the *Photo Miniature,* of July, 1903, on Aerial Photography. Whether or not, as therein stated, "it remained for America to set the pace on kite flying and photographing from kites", it is certainly true that New Mexico has done her share. Since the efforts of Messrs. Eddy, Archibald, Batut and Wentz, have been widely commented upon; we should, in justice, add another name to the list of illustrious air photographic pioneers.

S. Parks, a jeweler, formerly of New York, but for a number of years a resident of Las Cruces, New Mexico, is an expert kite flyer and photographer who has, for many years, given a great deal of time and thought to kite or aerial photography. In the perfecting of his apparatus and its gratifying degree of adaptability, a deserved success has crowned his labors. Mr. Parks' invention consists of an automatic device that is the simplest of models. The kite is sent up to any height desired; and then, when it has attained the necessary altitude, the real work is begun. At hand is an accessory that has been well named "The Messenger", in the form of a sail or miniature kite, and to this is scientifically attached a 3¼x4¼ camera. The string of the kite is passed through a pulley fitted to this last, and in an instant, and as if by magic, up, up, goes "The Messenger". At a predetermined or previously calculated distance a device has been attached to the string of the kite, itself a little higher; and, as "The Messenger", carrying the camera, arrives at this point with the direct accuracy of a cannon ball, the shutter is released and the picture is taken. After performing its duty, this ascending, camera-carrying device, automatically closes its sails or wings and starts on its downward journey, reaching the hands of the master and delivers the photograph it was sent up after.

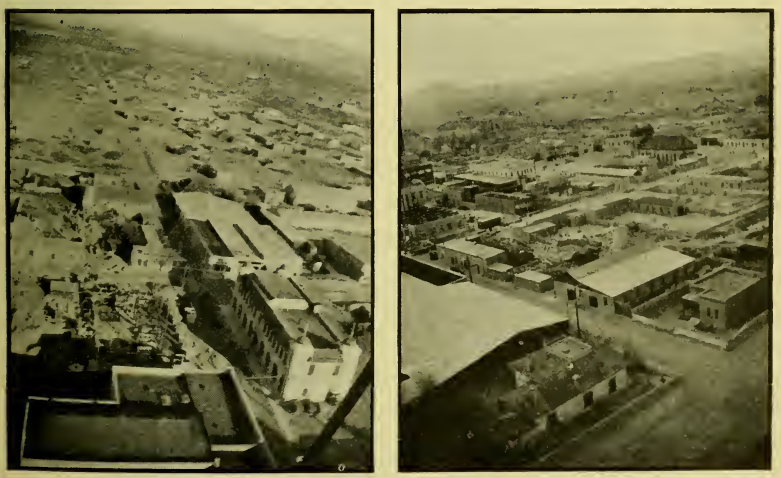
The inventor, having in view the fact that his device might be used on the battle front as a means of locating enemies, as well as friends, has also arranged a method whereby "The Messenger", after taking the picture, can be made to drop its sails, allowing the camera to descend alone, and therefore more difficult to shoot and destroy. This same device can also be used to distribute literature in the trenches. The kites used are of the Malay and the combination Malay Box types, these being found most satisfactory in the variable winds of this section of the country. They are easily constructed and very stable as to position. Any tailless kite, however, may be used.

The writer has seen a number of demonstrations given by the inventor, and he is of the opinion that Mr. Parks has produced a machine for photographing the position of the enemy that is one hundred per cent better than that at

EXAMPLES SHOWING RESULTS OF KITE PHOTOGRAPHY EXPERIMENTS

present in use by the French. His device requires the services of but one man, while the French equipment requires that of five. The latter demands almost a cyclone to lift the camera, with the hard pulling necessary to bring the kite to earth in order to obtain the film, while with favorable winds and the kite remaining in the air, any number of photographs can be taken in one day. The Eddy kite requires a tandem string, while Mr. Parks' invention needs only one.

There are two definite factors upon which Mr. Parks bases his claims of novelty and patentability, and these are: First, a method of taking photographs with a kite by first establishing the desired altitude and angle through raising the kite and locating the tripping device at the proper point in the curvature of the kite-string, so that the camera mechanism can be sent to that point. Second, a mechanism so constructed as to be lifted by the wind, operated at the desired point, and automatically returned to the starting point by the force of gravity.

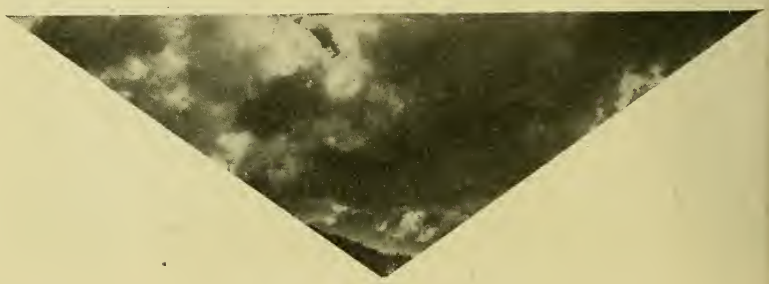


MADE FROM A KITE WITH A BROWNIE No. 3

The mechanism is wonderfully suited to its purpose, and one can appreciate this quite fully by seeing it work. Hundreds of beautiful and interesting views have been made, views unequaled in quality and detail. Two or three, selected at random, are reproduced herewith. Aeroplanes are expensive, and balloons are inefficient; and, when brought down after taking a picture, there is not only a picture lost, but lives and money are sacrificed. The Parks kite is inexpensive and does not endanger life. If one of the kites be destroyed on its way up or down, it can readily be replaced by another. Military authorities should request an official demonstration in some of the camps and judge for themselves as to its practicability.

Mr. Parks has been fortunate enough to interest those in authority at Camp Cody, Deming and New Mexico, where he demonstrated his ability as a kite photographer, using his inventions and demonstrating their action. Despite falling snow, he took twelve pictures, his apparatus fully proving its capabilities. The history, however, of wireless telegraphy, the Holland and Lake submarines, the Wright Brothers' aeroplanes, the Lewis machine gun and the present uncertainty of the fate of the Garabed invention, makes the inventor of this New Mexican method of kite photography somewhat pessimistic as to the reception his invention may receive.

Simplicity is a power that we find the artist of the brush often using to enhance the pictorial value of his work. Imagine the "Angelus" painted with the microscopic detail so dear to some artists, even of the brush. There are no doubt many productions containing elaborate rendition of detail that have won renown for the painter whose name they bear, but the fact remains microscopic portrayal of detail of form and texture does not in itself constitute a needed element in the production of a picture of artistic or intrinsic value. The charm of the "Angelus" depends in no small measure upon the charming simplicity with which the artist has invested the canvas in his masterful display of genius. Were a less consummate master of the brush to have attempted the portrayal of such a subject, how different would have been the result. Had such a subject been given a photographer, how confidently could we have depended upon the introduction of houses, trees and other objects that the portrayal might have been made more interesting; the success achieved by simplicity would have been denied.



First International Photographic Salon

By George Brookwell

With Some of the Pictures Reproduced

On Sunday afternoon, on the sixth day of January, I made my way to the Exposition Park of Los Angeles to see the first International Photographic Salon, being held in the Museum of History, Science and Art. I was greatly surprised at the large number of people, all, apparently, going in the same direction and with the same objective point in view. Rows of automobiles were lined up to the curb and a general holiday air prevailed; but still one sensed with this spirit a purpose not common on holidays, and that purpose was to see the exhibits, both natural and artistic.

The natural history exhibit in the splendid buildings are famed over the world. We refer particularly to the La Brea pre-historic skeletons. Leading museums and like institutions in other cities would give large sums to possess some of these wonderful relics. But it is not in these that we are interested at this time. Our mind is on pictorial photography, that artistic channel or

ON THE CANAL — By W. H. RABE

outlet, open alike to the millionaire and the twenty-five-dollar-a-week clerk, giving either that opportunity the fates may have denied him of otherwise expressing his artistic feeling, a bent that would be entirely neglected without this avenue of expression. Here I found, brought together in one of the most beautifully appointed rooms for such a purpose, a collection of the finest pictorial work; some of it by artists of many years' standing and some by entirely new men, but very generally work worth while. There was not one of the pictures hung that was without merit, and each was worthy of notice. About six hundred and fifty pictures had been submitted to the judges, but only one hundred and seventy-one had been accepted.

A BIT O' THE HILLS — By JOHN PAUL EDWARDS

As in every other collection of units, here and there some particular one stood out from the rest as more interesting, more worthy of special attention. The pictures by W. A. Hudson of Los Angeles, call for special mention. "The Ruined Altar—Capestrano Mission", is a fine piece of work. The writer has stood beside these ruins on more than one occasion, his mind picturing the scenes of long ago, but the original lacked the dignity and grandeur suggested in the work by this artist. "The Cave Sprite" by Arthur Kales, arrests the attention of every one, for it has a beauty appreciated by all. Sara W. Holm's "Twilight", and W. H. Rabe's "The Canal" are real pictures, telling the story of every-day life in her best moments. The title "Twilight" is particularly appropriate, being suggested both by the evening hour lighting and the period

in the life of the old couple still enjoying their companionship in their twilight days.

"Sand Dunes" by David J. Shehan of Los Angeles, makes one jealous of the ability that can produce so beautiful a picture from so difficult a subject, a picture showing the master in our art. Lou Sweet's "Edge of the Cornfield", Ernest Williams' "Dawn", and others by the same artists, make me wish I knew how to do as good work, for both are picture makers of no ordinary capabilities. The work of Mrs. G. A. Barton of England interests me very much. It is soft and real without the extreme in treatment that so many think good photographic art today, and for such we are really thankful.

THE TRAVELER By LOUIS FLECKENSTEIN

The work by Louis Fleckenstein of Los Angeles always pleases me; that is, most of it does. There is always a reason for his work. "The Traveler" and the "Portrait of W. A. Hudson" are fine examples of the pictorialist's art. There is an Old English air about "The Traveler" that reminds one of the good old sporting prints our English forefathers thought so much of in the days of long ago before the gasoline "buggy" occupied the field. Such pictures awaken old memories, and good ones at that. The portrait "Miss M." by J. C. Carlton of Los Angeles, has the real painter's quality, and his "Landscape Near Monterey" arouses a desire to be there. "A Bit of the Hills" by John Paul Edwards of Sacramento, increases one's appreciation of California, and the pictorialists living here are surely privileged beyond the ordinary man. "The Morning Shadows" by Forman Hanna of Globe, Arizona, shows that state to have elements of beauty that an artist can bring forth,

TWILIGHT By SARA W. HOLM

even from a bare hillside and a few straggly trees. "Manana", by a Wyckoff of Los Angeles, shows that the most unpromising subject will sometimes afford a beautiful picture. Here the most unprepossessing of humans; a begging, thieving Mexican, is so pictured as to be worthy of the painter's brush.

Time and space forbids all the good words I could offer concerning this exhibition. The attendance has been very flattering to the promoters; and, while such comparisons may hardly be worth while, we venture to say that an ordinary exhibition of paintings would be given no greater notice by the general public. If this is the indicator that spells success, then this pictorialist's effort was well worth while. A new appreciation of the country in which we live, an appreciation of the beauty in common things has been stimulated and through this, life is made better, sweeter and more worth while.

Art has not yet come to its maturity, if it do not put itself abreast with the most potent influence of the world, if it is not practical and moral, if it do not stand in connection with the conscience, if it do not make the poor and uncultivated feel that it addresses them with a voice of lofty cheer. Art should exhilarate, and throw down the walls of circumstances on every side, awakening in the beholder the same sense of universal relation and power which the work evinced in the artist, and its highest effect is to make new artists.—EMERSON.

A Dissertation on Home Photography

By C. R. Lowe

With Illustrations by the Author

INTERESTED

Yes, sir, "There's a photographer in your town", and in this particular case, I am the only one. It came about through a sore finger for which pyro proved to be the only antiseptic, and the inheritance of a F. P. K. No. 2. Of course, an interesting kid had some influence in the matter of supplying a fruitful field of operation and experiment. And if I have any particular talent it is along the line of child photography.

As we read the advertisements and observe the action shown in the pictures, we get the impression that a fast lens is very essential, and that the possession of one insures our always getting pictures with characteristic life and action showing. I have no fault to find with the writers of these advertisements, save that the results of their inspirations are unnecessarily discouraging to the owner of a camera equipped with only a meniscus lens and a rotary shutter. It is an undisputable fact that the better the outfit the more convenient it is, and the wider its range of capabilities; but it must be acknowledged that the better ones are a bit more complicated to handle and require more brains in their manipulation. I, myself, was quite discouraged at one time until the Editor came to my rescue with the suggestion that but few of those workers equipped with only simple lenses, achieved all they are capable of doing. He advised that I do some experimenting with my lens in order to determine just what it would do, and then confine my activities to the range of its possibilities. That one piece of information has been worth to me more than I have paid you, Brother C., for the eight years' subscription to Camera Craft that I have enjoyed. My aim in writing this is to encourage the worker who has only a simple, inexpensive camera.

I found that I could, with my simple equipment, get pictures showing as much action as many of the illustrations credited to speedy lenses. No, I did not get "speed" pictures; I am speaking of action, not speed. And the way

to do it, is to realize, and take advantage of the fact that there is almost always a rest period in every series of actions, a brief interval of time in which the exposure should be made. The trouble is that the photographer is too often rather over-anxious to press the button. Either that, or he is unwilling or too careless to study the subject and the movement. Even with the faster lens that I now have, I still find my "first assistant" in so big a hurry that I cannot study the light and movement to the extent that I desire, when photographing children. Did you ever sit and ponder on the right time to release the shutter as you watch the children at play? Do so, it will not spoil any films, and it will save you a lot of them when you come to making actual exposures. I found that I had to contrive a shutter working even slower than my simple rotary one, as described in the March, 1913, issue, and I was still working fast enough to "arrest motion", which is only another way of saying I made the exposure at the right moment, or when the motion was itself arrested.

Of course, I made failures, and I still make them with an f-6.8 anastigmat. You can't manipulate a bucksaw without brains. A fine lens is better than a poor one, but there is a range within which the meniscus will do just as good work as the anastigmat. A fine lens is not such an all-important necessity to the man who will willingly confine himself to the possibilities of the less expensive one with which he is equipped. In attempting portraits, and we all attempt them, we find that while an adult will sit still, maybe,—I have one portrait given fifteen seconds,—we have to catch a child when it is still. We can do it by trying, by watching for the rest period. Those clever pictures used in the advertisements are the choice of thousands of exposures.

The difficult part of home photography is to control the lighting and determine the required exposure. There are several methods for measuring the light, but the worker seldom goes into the matter carefully enough to use even the simplest light meter, despite the fact that he wants good pictures. You must either measure your light or take whatever you happen to get in the way of exposure. There is no other course. Remember this, almost any old outfit will do really fine work if one supply it with the proper conditions and the necessary brains. Personally, I have had quite good success at "feeling" the required length of exposure with any lens used for a time, a method discouraged in these pages, and probably a poor one to depend upon. I wouldn't recommend it, but it "can be did". I was told the other day of a man who could "feel" just where to drop his hook to get a fish, and the testimony was that "feel or no feel" he got the fish. One can use some standard meter, or work out this "feeling" for himself, but my opinion is that it will be easier with the meter.

As to the manipulation of the light, roundness and "modeling" is all a matter of lighting. You must work near a window. That may seem dogmatic; and, candidly, it is. You will, however, find it true, almost absolute. It is often recommended that we darken the lower part of the window so that the light must come from a point above the face. I seldom do so, but my light is generally diffused by the draw curtain common on the lower sash. I still have my wife hold a sheet on the opposite side of the subject to serve as a reflector

SOMEWHAT SHY "WHERE'S MY NIGHTIE?" QUITE SEDATE

and soften the shadows, though I have often swore, "as deacons do", I would make some sort of a stand.

My present method is to make children's portraits, or any kind of in-the-house picture, with a flash. Dangerous? Well, I once had a flash go off in my hand; and say, but it was hot. Take my word for it. Don't try it. But I am game enough not to blame the flash or the apparatus and acknowledge it was my carelessness, not to say stupidity. I knew it was "loaded", and might have known it would have "gone off". I have little difficulty with the movements of children when using a flash. I open the shutter with one hand and fire the flash with the other. If the worker has one of those synchronized contrivances with which the flash is fired and a very quick exposure is made while the flash is on, he ought not to have any trouble at all. If it is daylight, draw the curtains quite down, watch your chance and make the exposure. One-fifth of a second will be found ample, while the flash occupies only a fractional part of that period, other light will cause no appreciable impression on the plate with the lens working at f-6.8.

The advantage of the flash lies in the ease of its manipulation. An operator can have as much light as he wants, where he wants it, and when he wants it. It is simply a matter of measuring the powder and the distance. I took a 22 cartridge and soldered it to the end of a five-inch piece of wire, so that it will go to the bottom of a two-ounce box of Victor powder. I do not know how much it holds, and do not care. I do know that one of the measures full is sufficient for a portrait at four feet, and if I am farther away I use two or three. If you do not have absolute success, remember that the professionals have their troubles, also. I've seen them have 'em. I have never used a flash bag and probably never will, it is just that much extra stuff to manipulate when busy, and to have around when not wanted. There is, with the open flash, some

smoke and a trifle of ash, but there are disadvantages with a bag. Make your own selection and any dealer will take your money.

Always use a reflector to soften the shadows. Remember that the angle of incidence is equal to the angle of reflection and place it at such an angle that it will reflect the light onto the subject. Another thing to remember in making flashlight portraits is, do not turn out the lights. Let the light which you have used in focusing continue to burn during the exposure, and you will not be troubled with "that flashlight stare". This, however, does not apply to the flash cartridges, as one has to wait too long for the fuse to burn. If you have focused by daylight, do not shut it all out. As it is sometimes necessary to hang draperies aside, move furniture, and otherwise take possession, leaving things as they are found is always appreciated. I am nearly always told not to bother, but I always do.

NINETY-THREE YEARS YOUNG

I have promised myself that I would some day get out and do this class of work in a commercial way, having persuaded myself that I can sell some of it. If you care to dabble in such work, do not be afraid or ashamed to let your capabilities be known. But be sure you can do the job before you undertake it. With a bit of tact you can "plug" almost anywhere and at any time. I am a busy pastor and old - fashioned enough to think it best for me not to push this too hard as a money-making side-line. I can do a certain sort of advertising, however, and get what work I care to do by supplying only what is asked of me. I explain that I cannot make it too important a sideline, and why; but I can make some good pictures, and, "You ought to see some of those I have of my little girl".

Yes, I could make a living at it if I had to, and I believe I could do it right here in the neighborhood of Sioux City, where the people can go to town and have their work done, but they don't. I'll have a folio containing some of my work, show it, and while the prospective customers are looking at it, I can explain that they will not have to go to town and spend a day, tire them-

LOUISE FRANCES FRIZZLES

selves and the children out, etc. Just wash the baby's face, put on a clean dress, and we will be through in twenty minutes. Anyone will be glad and willing to order pictures, if they want any at all, when it involves so little on their part. There! Isn't that the sort of stuff you read in those lively advertisements? Read 'em in this issue and see.

Action is a strong point in a picture; but, while you have to work to get this with older people, with children it is largely spontaneous. One other thing, in making pictures of the children I seldom put a pencil on the negative, as they are naturally smooth-featured, and the shadows are consequently soft. Their case is quite different from that of a ninety-three year old saint in the parish, my portrait of whom has brought out considerable favorable comment and the promise of some work.

If one is so equipped that he can do enlarging he can make portraits any desired size and thereby suit the whims of his customer, which is a very good thing to do. Find out what is wanted before making the exposure; and then let them have it if it can be made. It is suiting the customer that gets the trade. And do not be afraid to ask a price that will pay you. If one does not think his work is worth anything no one else will. You do not need to ask as much as the studio man if he does not want to, because he does not have the expense, but be fair with him, you can get a better return for your work because he asks a good price. Some professionals may find fault with these suggestions, but I maintain that a semi-professional such as I have in mind, one doing the class of work that I do, is in no way competing with the studio man. Such a one picks up work that would never go to the studio. I do not think I have ever made any work that would have gone to a studio, and I know that I have often gotten people interested in pictures to the extent of visiting a studio for pictures they would otherwise have never ordered.

A man finds he has been wrong at every preceding stage of his career, only to deduce the astonishing conclusion that he is at last entirely right.

The Work of James N. Doolittle

By W. H. Rabe

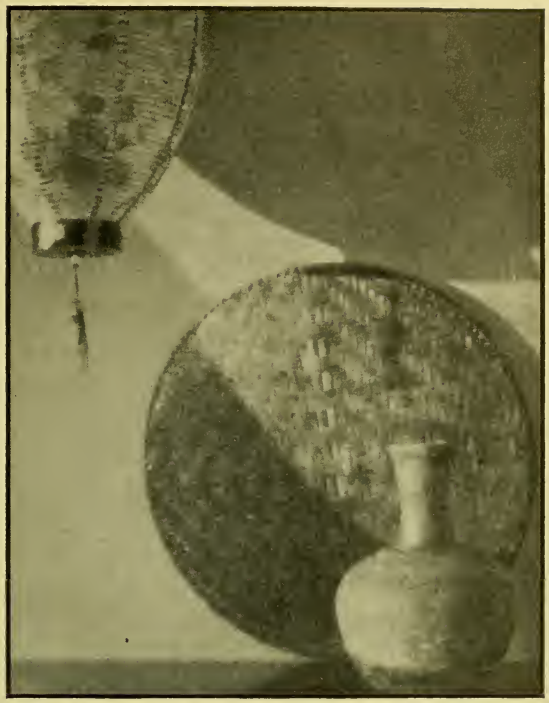
With Two of the Pictures Reproduced

During March there has been on the walls of the California Camera Club another very fine exhibition composed of forty examples of pictorial photography, a one-man show, the work of James N. Doolittle of San Francisco. Despite the fact that during the year just past, one-man shows by such prominent pictorialists as W. H. Porterfield of Buffalo, Edward Henry Weston of Tropico, Fred Archer of Los Angeles, J. B. B. Wellington of London, and others, have been shown, Mr. Doolittle's work does not suffer by comparison. In each display the individuality of the photographer has been forcibly presented, and of course each exhibition has had its own particular appeal. This is made plain in a study of Mr. Doolittle's work, for therein we find still another individuality,

A BREAK IN THE STORM

a new note, as it were. There is a dainty refinement about it, and a certain quality that distinguishes it from his predecessors. His style is of the most modern, tempered, by a desire to produce the beautiful.

His pictures are fine examples of pure art photography, pictures that show what the lens can accomplish when manipulated by an artist. Neither negatives or prints have received any material alteration, all "doctoring" or handwork being avoided. Mr. Doolittle makes a study of each picture at the time of its taking and it must satisfy him as to composition and effect before he exposes the plate. When taken, it represents the picture he saw, portrays the beauty conveyed to his mind's eye by the subject itself, and his skill with the camera enables him to do this and do it well.



STILL LIFE

He is particularly strong in his decorative portraits, one of which was awarded the gold medal at Toronto last year. His landscapes give us ideal interpretations of the varying moods of nature, many of them in a most decorative setting. Throughout his work, there is no evidence of mannerism, no striving after the theatrical, and still there is none of that weakness that these two last are sometimes thought to correct. There is a lesson to be learned by a careful study of Mr. Doolittle's work and the lesson is one that can have only a good effect.

All the prints are enlargements upon Artura, and one is surprised at the beauty and variety of tone that he has been able to secure. The Verito lens has been his choice, his exposures being made direct on 3¼x4¼ plates and then enlarged to 10x12. The original negatives are never given more than the occasionally necessary spotting out of a pinhole or other slight defect, and the enlargements are made without any manipulation whatever except, as he tells us, he

sometimes has recourse to an old mount in order to hold back the major portion of a print in order to give the foreground or the sky a little deeper tone.

Mr. Doolittle has been made a member of the Pittsburg Salon and he has been a steady and consistent exhibitor at all of the better salons and exhibitions during the last few years. His enlistment in the army will cause a vacancy in the ranks of the pictorialists that will be hard to fill.

The Pittsburg Salon

By the Editor

Press comments, all most flattering, show conclusively that the Fifth Pittsburg Salon of Photography is another success to the credit of those who have done so much to make these annual exhibitions events in the photographic activities of this country. The attendance on the first Sunday, between two and six P. M., was approximately fifteen hundred. About one thousand prints were submitted, and of these, three hundred and fifty-six were accepted, the work of one hundred and twenty contributors. California is represented with ninety-seven prints from twenty-nine contributors. In other words, California furnishes very nearly one-fourth the contributors, who in turn have to their credit well over one-fourth of the total number of pictures accepted. Not at all a bad showing for our pictorial workers here on the Coast. To this list should really be added the four very fine pictures by C. E. Beeson, secretary-treasurer of the Pittsburg Salon, as they were all California subjects made by Mr. Beeson on his last visit here.

The California exhibitors are: Edward Henry Weston, W. H. Rabe, Arthur F. Kales, John Paul Edwards, James N. Doolittle, Louis A. Goetz, Fred R. Archer, Ernest Williams, G. S. H. Harding, Percy Neymann Ph. D., Anson Herrick, Louis Fleckenstein, J. C. Carlton, E. M. Pratt, William Sanborn, Otto C. Shulte, W. A. Hudson, W. C. Sawyer, Clo Mallahan Bernard, Herbert H. Piper, J. H. Buffum, Alice Burr, F. C. Monell, Oscar Maurer, Samuel Adelstein, P. Douglas Anderson, John A. Hickey, Ralph Willis Brown and Erle Cawthorn Kenton. We should also mention Suisoi Itow, Harold M. Sawyer and Will H. Walker of Portland, not forgetting Forman Hanna of Arizona, and George J. Midgley of Salt Lake City, as being real Westerners represented by some good work.

As a side light that may interest,—or amuse, we quote the following from an extended review of the Salon, published by the *Pittsburg Gazette-Times,* from the pen of Glendinning Keeble, a writer who explains that his ignorance of the processes of photography makes him diffident about expressing an opinion on any qualities except those properly analogous to painting. He says:

"It is true that what I believe is called the 'soft lens' is very much overworked in this exhibition, giving a softness and flabbiness to many subject which

were better seen more distinctly. There is no need, of course, to give everything the sharpness of Charles H. Jaeger's two very charming little plates; but, on the other hand, every one of Francis Libby's subjects receive far less than justice through the almost impenetrable haze and gloom with which he has covered them. My impression also is that there is less striving for the 'artistic' subject, obviously and artificially arranged. The subjects with nudes err most often in this respect, and the photographers that seemed to have some leaning in this direction include Katherine Brucherseifer, Arthur F. Kales, Percy Neymann, Frederick Pohle and Ernest Williams. It is not that the artist does not possess a perfect right to arrange his subjects to gain the best possible effect, but the amount of arrangement should not exceed the results obtained. In many of the works of these people it seemed a great pity that a charming landscape was intruded upon by cavorting nudes in awkward or unmeaning postures. But for the most part, I repeat, the compositions show both tact and taste."

The reader can, of course, take the above quotation just as he pleases. It does not voice our own opinion, based on our knowledge of the work of many of the exhibitors. The writer of the review is no doubt quite honest, and his praise of the Salon throughout the rest of the article is sincere and unstinted.

Progress

Again it is a general rule that all the arts and sciences advance together; but this is not without many exceptions. These are not so apparent in the early stages of human progress as in later times. Homer lived and sang when the arts were unborn, or at least in their infancy. The Roman civilization, though advanced in some of the sciences, produced no art except architecture worthy of name; and in the literary age of Shakespeare and his contemporaries, there was no corresponding sculpture or painting produced in England. In our own time and country, the civilization is extensive and wholesome; the sciences and the more matter-of-fact industries are well developed; but as an offset to them the arts, with some brilliant exceptions are flippant—witness the poetry, novels, pictures, plays, operas, decorations.—John C. Van Dyke.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

REMOVING SILVER STAINS: I occasionally get nitrate of silver stains on my hands or sleeves and find them almost impossible of removal. A strong solution of iodide of potassium, however, will often remove all except a trace of them if well rubbed in and then rinsed out.—S. D. F., Vermont.

PREVENT LAMP SMOKING: Those who use an oil lamp in their darkroom will find it an excellent plan to soak the dry wick in a strong solution of common salt, dry, then dip again in a mixture of oil and the same kind of a brine as first used, putting it directly into the lamp. The wick will last longer, give a better light, and will not be tempted to smoke as such lamps too often are. —A. S. D., Connecticut.

PRESERVING THE RUBBER TUBING: Occasionally immerse the tubing in a mixture composed of one part of ammonia and two parts of water, and allow to remain therein from one-half to a full hour or until the original elasticity has been restored. An occasional wash in the ammonia and water will be beneficial, as will also keeping the tubing in a sealed tin box, containing quicklime and ammonium carbonate.—J. K. L., Ohio.

REMOVING YELLOW DEVELOPING STAINS: Pyro and hydroquinone will sometimes leave the negative so yellow that it prints quite hard and unsatisfactory. After fixing and washing thoroughly, immerse in a solution made up as follows:

Water	20 ounces
Sulphate of iron	3 ounces
Sulphuric acid	1 ounce

Allow to remain until stain disappears, then wash well and dry. Lantern slides can also be greatly benefited by a few minutes' immersion in the same solution.—D. F. G., Tennessee.

PHOTOGRAPHING A MAN IN A BOTTLE: This is not a new trick at all, but a sample or two in one's showcase for a few days will attract attention. First photograph the man against a black background, keeping the figure small and marking its exact position and size on the focusing screen. Then place a clear glass bottle on a stand in front of the black background, bring the camera up close, arrange so that the indicated figure on the focusing screen comes just right in the focused image of the bottle, and give a good long exposure, one about twice what would be sufficient, using the same plates as used for the first exposure for the small figure of the man standing. The resultant negative will give a print showing the man calmly standing inside of a huge bottle. I once made one such picture showing the man trying to climb a rope extending upward to the cork.—F. G. H., New York.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

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Those Flashlight Licenses

To prevent disloyal persons from procuring explosives and to keep explosives out of the hands of those who might not guard against their being stolen and used by disloyal persons, Congress has enacted what is known as the Explosives Regulation Act, H. R. 3932, becoming effective November fifteenth, 1917. Copies of this act, "Public, No. 68, 65th Congress", together with a list of the explosives and ingredients of explosives, among which flash-powders and magnesium are listed as requiring a license, may be obtained from the Bureau of Mines, Department of the Interior, Washington, D. C. From the same source, if not obtainable from a duly authorized licensor in one's own town, can be obtained form 6-879, "Information for Applicants for Licenses and for Licensees". Still another, form 6-872, "Instructions for Licensors" is also supplied.

The last mentioned, form 6-872, interests only licensors or licensing agents; form 6-879 gives the dealer full instructions, including those regarding the record that must be made at the time of each sale, this record to embrace, among other things, the number of the purchaser's license and his name.

In the large cities one will find, in addition to the county clerk and his deputy, several notary publics who have been made licensors and who will issue the necessary licenses to the proper applicants appearing before them in person and swearing to the correctness of the statements made in a form filled out and signed, the fee being twenty-five cents. Photographers in the smaller towns can ascertain the location of the nearest licensor by inquiring of their county clerk. Licensors or licensing agents are appointed by the Director of the Bureau of Mines, and they must be municipal, state or other officers authorized to administer oaths, in order to qualify. Form No. 6-872, mentioned above, gives them all instructions, and application for such appointment or authorization should be made upon form No. 6-881.

We think the above should give our readers about all the necessary information, as well as the source from which may be obtained any further details required. The Bureau of Mines has advised that an Explosives License must be secured by every professional, commercial or amateur photographer using flashlight powder, flashlight cartridges and powders and cartridges in flash-machines, flash-cabinets, portable skylights and the like. Dealers can sell only to those licensed, and, as explained, must keep a record of each sale, such record to be sworn to and furnished the Director of the Bureau of Mines whenever requested. Licenses are good for the duration of the war, subject to cancellation for cause by the Director of the Bureau of Mines.

To summarize: Ask your dealer or county clerk where the nearest licensing agent is located. Go there, fill out an application, form No. 6-860, sign it and

pay the licensing officer twenty-five cents for issuing the license, form No. 6-861, and administering the necessary oath. When you go to your dealer for flash-powder, take your license along, and when ordering by mail, enclose it with your order,—it will be promptly returned. In case of loss or destruction, a new license may be obtained upon satisfactory evidence that the facts are as claimed.

Those Rotary Print Dryers

Rotary print dryers are far from being a new thing, several of our local finishing plants having been equipped with them for a number of years, and we know of plants elsewhere that have had them in operation for even longer. These, of course, were all home-made affairs, some of them mechanically good, and others somewhat crude, but as far as we know, practically every one of them was recognized as a great convenience and a time and money-saver. This, however, brings us to the other point, the cost of the machines now on the market, which we can dismiss by quoting one of these pioneer users of the home-made machine, who said: "I wish these machines had been on the market when I first found the need of one. I could have saved about one hundred dollars, a lot of vexation and annoyance, and had a better machine as the result." And this brings us to another point, the improvement and perfection made possible by actual use. In selecting a machine from the list offered the intended purchaser should not be too greatly influenced by any unfavorable report he may have from a user of one or more of the several makes. They have all, or nearly all, been greatly improved within the last few months, such betterment being based upon actual working experience. A revolving drum or drums, with a heating arrangement inside and an endless belt to carry the prints in contact therewith, seems quite a simple mechanical problem, but to so design and build a machine of this kind that it will invite the minimum amount of trouble in actual continued use in all kinds of hands is not so easily done. Those on the market today, those that the manufacturers find it worth while to advertise, are all good and the prospective buyer is perfectly safe in investing in the one that most strongly appeals to him after investigating their several claims. If one will figure out the saving of labor, the increased production and the advantage of being able to turn work out promptly, the investment will be found justifiable in the case of any photographer doing photographic finishing, either for himself or others, to any extent. One who has ever used a rotary print dryer can never be induced to return to the time-consuming and vexatious methods now being so rapidly abandoned by the progressive photographers.

Every varying tone has a relation to every other that gives a value to it, which is marred or frequently lost altogether if it is not truly rendered. This is so well understood in France that special study is given to relative tones or "values" till a mastery is obtained in dealing with them, and that gives the great strength of the French school as opposed to the English. Choose a subject where the relative tones are simple and plainly marked, and the masses are not too complex.—Ellis

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D., Burlingame, California

New Method of Producing Tri-Color Prints

It is generally recommended, in making the three negatives for tricolor printing, to use panchromatic plates for all three exposures. But my experience is that the best results are obtained when using plates sensitive to that part of the spectrum that is transmitted by the filter used. Thus for the yellow printer an ordinary blue-sensitive plate is best, for the red printer an orthochromatic plate, and for the blue printer a panchromatic plate.

This system, in addition to giving a better analysis of the colors, gives a more convenient means of calculating exposures. For instance, the card issued with a box of panchromatic plates gives the multiplying factors for the three filters as: Blue five, green twelve, red ten. But by using, say, a drop-shutter plate, a verichrome plate, and a panchromatic plate of equal H. & D. sensitiveness we get factors of blue five, green seven and one-half, red seven and one-half, which are much easier and simpler to calculate accurately from the standard given by the exposure meter.

For the development of tricolor negatives, the "B.J." pyro soda diluted five times, or the Wratten card pyro soda formula diluted three times, gives infinitely better negatives than any other reducing agent. Tricolor sets should always be developed together, and always in a tank of just sufficient capacity to take the three plates. Tanks to hold only three or four plates are not on the market, but they are easily made. Probably some may dispute the statement that tank development is better than dish; but before saying anything for or against this statement, it is advisable to try the two methods carefully side by side.

To produce a tricolor print, it is necessary to have a print from each of the three negatives, which is, or can subsequently be made to be, a color complementary to the light-filter which screened the plate used for that particular negative. Of these three prints, two, viz., the pink and the blue, must be quite transparent; so that the colors will blend with those above and below when the three are superimposed, in order to make the color print complete. The base print, the yellow, does not require transparency; but must be a good solid print showing the tones well, with the darker half-tones and shadows graded light to dark gray. Mr. Hamburger gave the clue to this improvement over the dead and muddy-looking carbon yellow base, with his yellow-toned bromide prints; but in those prints the darker tones are reddish, and defeat the object aimed at.

The pink and blue elements must be quite transparent. The amount of color in each must be under perfect control; and this is another point in which the commercial tricolor tissues fail, it being almost an impossiblity to obtain two films in which the color left in after development is identical when viewed by transmitted light, although by reflected light, and backed up with white paper, they look quite alike. This difficulty with transparent images judged by transmitted light is also met with in lantern slide work; and with all processes, therefore, to produce successful tricolor prints, especially in quantities, we must have the pink and blue images perfectly transparent to start with, and dye them to a standard depth.

The idea of having transparent images and dyeing them afterwards is not new; but the methods published for obtaining them have not given satisfaction, because the films contained a developed silver image, which in no circumstances could be made quite transparent. The only method by which really transparent images can be made is by carbon: but it is not possible to use a tissue of plain gelatine only, because the light would penetrate right through the more transparent portions of the negative and anchor the gelatine film to the backing paper. If the gelatine

is pigmented with just sufficient manganese dioxide to stop the through-light action; then when the image is developed upon its temporary support, the pigment remaining in the print can be removed entirely by means of a five per cent mixture of sulphurous acid and water, which will leave a perfectly clear and transparent image, which may be easily dyed in any quantity and to any standard. So far as I know Edgar Clifton was the first to use manganese dioxide in tricolor carbon: but his method was to mix it with the blue pigment, to dilute this and render it more transparent.

Tissue pigmented with manganese dioxide serves for the pink and the blue constituents of a tricolor image; but for the yellow constituents I use a tissue in which the gelatine is lightly pigmented with lamp black, so producing a tissue that is just sufficiently dense to prevent through-light action. A print made with such tissue will be quite transparent in the lights and lighter half-tones, and will have a delicate visible gradation in the deep shadows, which will be gray. When this print is dyed yellow the gradations are perfect from lights to shadow, the whole being juicy instead of muddy.

If these prints are mounted upon transparent celluloid as the temporary support; development, dying, superposition, and transfer are quite easy. With regard to the dyes used, any maker's dye may be used so long as it is a wool dye. Judson No. 20 for the yellow, No. 34 for the blue, and No. 35 for the pink, all work well. All the images take their respective dyes quite readily, and do not easily over-dye. The washing necessary to remove free dye does not reduce the dye in the image unless unduly protracted.

The tissue pigmented with lamp black lends itself to another method of making tricolor prints. For this method prints are made from each of the three negatives and developed upon celluloid; the yellow image is then dyed, and afterwards transferred to paper, soaked in formalin and again dried, and again soaked in water. The pink print on the celluloid is dyed in the pink dye, and when fully dyed is washed until all free dye is removed. The wet yellow print is put in contact with the pink print, and when properly superimposed the two are squeegeed in contact, placed between sheets of wet blotting paper, and under a weight for a few minutes. When the print is stripped away, the pink image will be found set off upon the yellow. The print is dried, then again wetted, and having dyed the blue image, it is mounted in contact and left between sheets of wet blotting paper and under a weight. When the print is stripped from this there will be a very delicate tricolor image.

This imbibition method will be found quite reliable as to results, because all the surplus gelatine has been removed. Consequently only just sufficient dye is absorbed for making the images.

In my first experiments towards obtaining perfectly transparent images I made some tissue with plain gelatine, and then made up three sensitizing baths. In one was mixed the yellow dye, in the other the pink dye, and in the third the blue dye. After exposure and development the images were quite good; but in all there was a deficiency of depth of color, but this was remedied by a subsequent immersion in fresh dye. It was rather a messy operation sensitizing, and the hands were afterwards quite interesting color studies, so this method has not been fully investigated, and is mentioned in case someone would care to work it out.

The print is first soaked in warm water, blotted off, laid face upwards on a sheet of glass, and a little glycerine is rubbed into it, and then blotted off. The ordinary stock solution of gold chloride, of a strength of one grain to the dram of water, forms the toning bath. A few drops only of it are needed, and these are poured on to the print and at once spread all over the surface with a camel-hair brush or a tuft of cotton wool. The action is a rapid one, and as soon as it has gone far enough the print is thoroughly washed. To prevent stains from appearing at a later stage, it is placed in an ordinary metol developer for two or three minutes, then well washed and dried.

Uranium ferrocyanide can be deposited upon a platinum print in the same way in which a bromide print is toned with it, and some very pleasant colors are obtained by that means. Ten per cent solutions of uranium nitrate, of potassium ferricyanide, and of sodium sulphite may be made up. Half an ounce of acetic acid is diluted with water to make five ounces, and to this one dram of each of the above solutions added in the order named. The print after toning in this

is washed until the whites are quite free from any stain and then dried. This gives a very fine brown color, and at the same time intensifies the print a little.

As uranium ferrocyanide was practical, I thought copper ferrocyanide, which gives such rich tones to bromide prints, might also be used with platinum; but this, so far, has not succeeded in my hands. I have tried a number of modifications of the Ferguson method; but only succeeded in altering the color of a platinum print when the whites also were stained. It is probable that any toning action that took place was due to traces of iron in the paper, and not to the platinum image itself.

An interesting method of getting brown tones on plantinum is by the Packham method. This employs Bengal catechu, half an ounce of which is boiled in a glass flask in half a pint of water for a few minutes. Two ounces of alcohol are added and form the stock solution. The toning bath consists of half a dram of this stock solution to a pint of water, and in this the prints tone to a fine warm sepia. If the bath is used hot, and especially if potassium oxalate and cane sugar are added, the toning is rapid; but a cold solution of the catechu by itself will gradually tone the image, the action being complete in a few hours. The prints can be left in the liquid face downwards undisturbed, and merely looked at from time to time until they have toned sufficiently, when they are washed and dried.—W. T. Wilkinson in *Photographic Journal.*

Bloom on Negatives, Transparencies and Prints

Some little time ago we had occasion to search through a number of old negatives for a particular one that happened to be wanted, and in the course of the search came across a very great number of examples of that annoying trouble which is best described as "bloom". This takes somewhat different forms, being in some cases a whitish deposit like the bloom which is admired on a ripe peach. In other cases it looks more like a tarnish, while it often assumes a silvery sheen and sometimes shows colors. Its appearance leaves little doubt as to what it is in the majority of cases. Nothing but a sulphide would be likely to produce such effects, but the cause is a little more obscure. If, however, we have a sufficiently varied number of examples, and know their history, it is not impossible to arrive at a clue.

The facts that we have been able to collect are as follows: The effect is to be met with in negatives, bromide prints, lantern slides, and uranium-toned bromide prints, and occasionally, under special, well defined conditions, is seen in sulphide-toned prints. In the case of negatives, varnishing is an absolute preventive, but unvarnished negatives frequently show bloom, even when kept boxed, if the storing place is in the least degree damp, while its appearance is almost inevitable and fairly rapid if a negative is left exposed for a few weeks to the atmosphere of a dark-room, especially a gaslighted one. While boxed negatives may be safe for some years, a few weeks will be enough to produce the effect if the negative is exposed.

In the case of lantern slides the effect is rare, unless an unboxed slide is left exposed for some time. Boxed and finished slides very seldom show it, though they may develop other defects of a peculiar kind, due to their frequent exposure to intense heat. With bromide prints, again, the effect is somewhat uncommon, and we have only met with it in prints that have been framed and exposed to light for a very long time. On uranium-toned prints it is not only common but may be considered inevitable, some time or another, if they are not varnished, and we are not possessed of any proof that even this precaution is a perfect prevention, though if the bloom, having once appeared, is removed, and the print is then varnished, we have never known the defect to recur. The incidental fact that the bloom can be removed is a rather important one, for it shows that the effect is quite superficial. In sulphide-toned prints the bloom sometimes appears on very dense parts of the image, when, so far as we can tell, all the solutions, etc., are in perfect order, while, and this is a very suggestive fact, it can always be produced on such a print by using a strong and stale sulphide bath which contains more than a certain proportion of hypo. All these various items of evidence point to one thing, namely, that the effect is due to light or atmospheric fumes, or the two together, acting on a silver salt of some kind, a certain degree of dampness accelerating the effect. In the case of uranium-toned prints we know that such a salt exists, for the toning naturally tends

to produce silver ferrocyanide, while the process, as ordinarily conducted, includes nothing at all likely to remove this compound. It can be removed by various solvents or fixing baths, and in that case the appearance of the bloom is certainly delayed, if not prevented altogether. Such extra baths, however, generally alter the color to such an extent that people do not like using them. Again, in the case of a stale sulphiding bath, we know that hypo exists, and if there is enough of it, is capable of dissolving the silver bromide or chloride image upon which we are working, the result being an immediate deposit of silver sulphide on the surface of the film. In both these cases the existence of a silver compound is certain, but in the case of an ordinary negative or plain untoned image the reason of its existence is not so apparent.

If we consider all the details of the procedure to which the untoned image is subjected, it would seem that there is only one possible source of a superfluous silver compound, and that is the fixing bath, which, while it is acting, is itself a solution of silver in the form of thiosulphate. The effects of imperfect fixing are often dwelt upon. We are constantly being told of the existence of several thiosulphates, one of which is insoluble in water and can only be removed by the continued action of hypo. But the effects of ordinary faulty fixing are usually fairly obvious and fairly quick. If this is the fault it does not need years to provide the evidence. In a very short time we can see that the image is spoilt, and, further, that the defect is by no means superficial and removable, but, on the other hand, is quite incurable. All the same, there is nothing but imperfect fixing to which we can attribute the trouble of bloom, and the phenomenon suggests to us that quite perfect fixing is an ideal condition that cannot be attained by ordinary methods of working. We know that to remove the hypo from a plate by washing requires repeated soakings in fresh lots of water, and that even after several such soakings a very minute proportion of hypo still remains. Too little to matter, but just enough to be detectable by a very delicate test. In the same fashion it would appear that the complete removal of all silver thiosulphates from the film should require several separate soakings in fresh hypo solution, but generally a plate has only one, and we believe never more than two. The inference is that practically every silver image contains in its film minute traces of silver salts liable to be affected by favorable conditions of moisture, light and atmosphere. When a silver spoon shows tarnish, as it will do very readily, that effect is due to the formation of silver sulphide. But, even though the spoon may be deeply discolored all over, the actual amount of metal silver that is turned into sulphide is inconceivably minute and practically unmeasurable. In the silver image as ordinarily produced, and after taking all the usual precautions, it is not only possible, but likely, that there is relatively quite as much silver left in the form of unremoved thiosulphate as is affected on the tarnished spoon, and if we consider the thickness of the gelatine film it is probable that there is much more altogether. Any that exists in the interior of the film is, however, protected from outside influences; hence bloom only appears on the surface, for which reason it is readily removed. Baskett's reducer very quickly fetches it off. We have also removed it very effectively with soap and water applied with a pad of wool, while a dry bromide print can often be cleaned quite perfectly with hard india rubber. As pointed out in the case of sulphide toning, the bloom is often more obvious on, and sometimes is confined to, the denser parts of the image, which is just where any silver thiosulphate compound is likely to be retained in the greatest quantity. In bound lantern slides the effect is uncommon, just because the slides are bound, and therefore more or less well protected from the atmosphere. Moreover, they are usually kept shut up in boxes away from the light, and also in a dry place to preserve their binding strips. Still more, they are very thoroughly dried at intervals by being used in the lantern. Bromide prints again are usually kept well protected, and in the few cases we have known of bloom it is quite possible that the fixing was just a little less perfect than usual. But also bromide prints are very often treated to clearing baths, and these may have some effect on the residual silver compounds. In fact, it would appear certain that they must have some effect, though what, is uncertain. Here we may draw attention to another point not yet mentioned, and that is that we have

seen no such sign of bloom on any negatives that have been reduced. Such negatives can nearly always be identified by their somewhat shiny surface, and their immunity not only affords confirmatory evidence of the truth of the theory of the cause of bloom, but suggest the advantage of using an extremely weak Farmer reducer as a form of clearing bath. In point of fact, such a bath is often used with positives, and this may in some measure account for their apparent freedom from bloom.

Possibly, however, the most important conclusion to which we can arrive is the benefit of varnishing. Some years ago this was an operation no ordinarily careful photographer neglected; nowadays it appears to be one that only extraordinarily careful ones carry out. There is, however, no doubt whatever that it is an extremely important one. With good dry storage there is, perhaps, little fear of bloom on unvarnished negatives, but we cannot always ensure that ideal storage conditions are fulfilled, whereas the simple operation of varnishing makes things certain even under most adverse conditions.—*British Journal of Photography.*

Aerial Photography

Last year I was able to show you some of the achievements of the photographic branch of our military service, and to convey some idea of the wonderful part which photography in its hands is playing in the war. I was unable then to deal with the naval side of the same subject, for reasons which I need not give at the moment; but now, thanks to the kind permission of Commodore Paine, Director of the Air Services, I can partially make good the omission.

Time will not admit of anything more than a brief resume of what our naval airmen are doing, and for obvious military reasons much of their wonderful work must remain a sealed book, as far as the public are concerned. I fear that, even after the war, half can never be told of their marvellous efforts. In a military sense photography was almost an unknown quantity with us when hostilities commenced, and its value for some time went unrecognized. But there has now been built up in the two services a gigantic photographic organization, which has a most potent influence on the war; and not until its history can be fully written will the true position and value of military photography be understood and appreciated. When that time comes I hope we shall not find that our society has been in any way diffident in bestowing the highest honors upon those who have accomplished so much in aerial photography.

The headquarters of the Royal Naval Air Service are not very many miles from London, and at these the recruiting for the service is carried on and the the men receive their technical training. The designing and perfecting of the apparatus required is also done in a branch of the same establishment. Since 1914 not only has the apparatus been vastly developed, but the work done with it has been correspondingly extended. When the R. N. A. S. photographic service was formed, the greatest height at which serviceable photography was considered possible was about three thousand feet. During 1915 this was increased to six thousand feet, which in 1916 was carried up to fifteen thousand feet, while today most valuable results are obtained from twenty thousand feet. Nor is there any reason to suppose that the limit has been reached, or that when some means have been devised to sustain life in still more highly rarefied atmospheres, this record will not be beaten.

Fundamentally, the cameras used by the naval and military services are similar; but there are differences in detail. The military use an apparatus constructed chiefly of wood and operated generally from outside the machine; while the R. A. N. S. cameras are constructed almost entirely of metal and are worked from inside the fusilage. The shutter is one of a strong, reliable focal-plane type. The equivalent focal length of the lenses varies from about ten to forty inches, and the plates from 4x5 to whole-plate size.

About two dozen plates is the number generally used upon a photographic reconnaissance, though occasionally more are required. These are not promiscuously exposed, but each has its definite objective. The plates are developed, fixed, washed, rapidly dried, and a hundred prints by contact are made and delivered to headquarters in something less than three hours from the time when the machine came to earth. Often the machines returning from these photographic expeditions have suffered badly from shrapnel and machine-gun fire.

To take a few typical cases out of very

many. I can tell you of one pilot who was flying at a height of many thousand feet well over the enemy's lines when a shot put his engine completely out of action; nevertheless, he planed back and delivered his exposed plates safely at the aerodrome. Another, fourteen thousand feet up, was attacked by a hostile machine and his engine was also totally disabled. In spite of this he drove his adversary down into the sea, and he himself planed back fourteen miles to the starting point with his photographs. Another pilot, shot right through from front to back at the shoulder, while a long way from his base, was able to fetch his mark and make a good landing with his exposures. In the course of a reconnaissance to obtain one series of photographs, another machine was hit in thirty-four places, and yet came back with the work. I could go on giving these examples almost ad infinitum.

In concluding I wish to take this opportunity to remind you that chivalry is not missing amongst the British airmen. On one occasion after a photographic reconnaissance in Flanders, one of our airmen was flying at an altitude of thirty thousand feet, and at that great height an anti-aircraft gunner was successful in scoring four direct hits in succession; however, the pilot managed to bring his machine back to his aerodrome, and as he stepped from his machine he doffed his cap in recognition of the skill of the gunner.—*Amateur Photographer*

The Reduction of Intensified Images

Not infrequently we receive queries as to what is to be done with negatives that have been over-intensified with mercury. How they can be reduced, or sometimes, how they can be restored to their former condition. One recent query referred to a special case in which a mercury-bleached image had, by accident, been put into a sulphide bath instead of the proper one, and therefore was strongly over-intensified. These queries raise points that might very well be made the subject of special investigation, for while much has been done in regard to the subject of intensification, very little is known as to the possibilities of after-treatment calculated to undo the effects. Pending a more detailed knowledge of what can be done, there are, however, certain useful facts at our disposal. It should be possible to reduce an intensified image either by removing the silver or the mercury, which together make it up, but it is obvious that the second course, if possible, would be very inadvisable in the case of images from which a certain amount of silver had already been removed in the intensification process. Images of this kind are produced when the process used is the mercury-ammonia, mercury and sulphite, or Monckhoven's formula, and the only safe reducer to use in such cases is one that will attack the silver only and remove what is left of it. Such a reducer is hypo, which will more or less reduce any of the images, provided any silver compounds are left in them at all. We say "more or less", because the quantity of silver left after blackening the bleached images is very variable. If the blackening solution is left on too long, then in some cases it seems to remove practically all the silver, whereas on other occasions so much is left that hypo produces a most appreciable effect. This makes it clear why it is unsafe to apply any solution likely to remove the mercury, for it is obvious that if the blackening solution leaves very little silver, the removal of the mercury will leave practically no image at all.

There are, however, several other processes of mercurial intensification, and in at least three of them no silver is removed at all. These are mercury and re-development, mercury intensification applied by the Lumiere physical method, and mercury followed by sulphide. In the first two of these the silver is left in its metallic form, while in the third it is left in the form of sulphide; therefore in none of the three can hypo have any effect. A reducer such as Farmer or persulphate will, however, act, and the former, at any rate, seems to attack both the silver and the mercury. Persulphate appears to do much the same, but the point is not quite so certain. As is well known, Farmer's reducer tends to increase contrast by eating away the lower tones altogether, and in the case of a mercury-intensified negative this peculiarity is even more accentuated than it is with ordinary negatives, as the denser deposits seem much more resistant. The weaker tones may vanish completely before the deeper ones are visibly affected. Persulphate acts in its usual fashion, but both reducers tend to alter the color of the image, and to produce a warmish tone. Hypo hav-

ing much the same effect in the case of the other intensified images referred to, it seems probable that mercury naturally gives a warmish tone when not combined with silver. These two reducers, Farmer and persulphate, act on a sulphide-tone image almost as readily as they do on a developed one.

It will be obvious that in any of the cases mentioned the final image is very different in composition from the original one, even though the reduction process may possibly have reproduced the original printing density more or less closely. It may be possible to remove all the mercury and leave the original silver image intact.

Another kind of intensification that may be overdone and need reduction is the chromium process. In this the intensification is produced by the addition of a chromium compound to the image, which compound is soluble in acids. A great deal of it can be removed by simple soaking in a five per cent solution of hydrochloric acid, but an even more effectual method is to repeat the intensification process itself, giving the negative an extra long soaking in a bleacher containing a considerable addition of acid. Thus, if a negative has been intensified by the B. formula, given in the *British Journal Almanac,* a repetition with the C. formula will give rather less intensification if a rather longer time than usual is given in the bleacher. The bleaching process may also be followed by a plain bath of dilute acid, which will take away yet more of the chromium compound, and, incidentally, assist in the removal of the yellow stain. Uranium is not much used nowadays, but it is as well to remember that the color upon which the intensification depends can be instantly removed by a weak alkaline bath. This practically restores the image to its original condition, save that a certain amount of silver compound, probably ferrocyanide, is left, which it is best to re-develop if the negative is to be kept. This silver compound will barely be noticeable, but it is there, all the same, therefore a thorough wash, re-development, and a brief fixing are advisable precautions.

The right treatment for silver-intensified images is obvious. They consist of silver only, therefore ordinary reduction methods must be applied. If mercury iodide has been used, the best procedure is a little doubtful, as such images are of somewhat obscure composition. If the process of intensification is completed by the application of a fixing-bath, as is often the case, then the further application of hypo will be of no use. If, however, the intensified image is unfixed, hypo will usually have an appreciable effect. If more reduction is required, then Farmer or persulphate must be resorted to, there being apparently no alternative methods.—*British Journal of Photography.*

Sketch Portraits—A Method of Direct Work on the Original Negative

The sketch-portrait, in which the essential part of the image, namely, the head and face, and possibly the arms and hands, is reproduced in tone by the direct impression of the negative, and all the rest is worked in line in the form of a sketch more or less detailed, is the subject of an article by M. Jacques Béryl in the *Photo Revue.* There are two distinct methods of making these sketch-portraits. In one of them the original negative is directly utilized; the other requires the draughtsman's work on the positive print or on an enlargement. The first method, of course, allows of as much multiplication of prints as one may desire, whereas the second is limited to the one example, and is only to be duplicated by re-copying. The author confines himself in this article to the sketch-portrait as executed on the original negative. The first essential, having chosen the subject with this express object in view, is to employ a proper background, which shall be as far as possible uniform and of black or at least of dark tone. No kind of background is ruled out, whether it be interior, landscape, or foliage; but to have a background of uniform pattern and dark is preferable, in that it simplifies the work of drawing, which represents for most photographers the principal difficulty in procedure. A background which in the negative is light and even will make it possible to follow more easily the contours of the parts which are to be worked in.

The glass side of the negative is covered with a layer of varnish, of red or other non-actinic color. The coloration must be sufficiently deep to obscure the impression of the parts it is desired to keep covered, both when viewed by daylight and by artificial light of a certain intensity. Then with the point of a pen-knife well sharpened, one

removes the colored varnish covering the head and other parts of the subject which it is desired to leave in half-tone. The drawing of the accessories which are to be translated in line is obtained by tracing the knife point through the varnish in such a manner as to get furrows of clear glass; these correspond to the outlines of the dress and of whatever it may be desired to include in the sketch. For this purpose the negative is placed upon an inclined glass plane, such as the desk commonly used for retouching. When a certain stage in these manipulations has been reached, it is as well to make a trial print in order to take account of the progress which has been made and of the modifications it may be desirable to introduce in completing the work.

Many varnishes fulfil the required conditions of opacity and flexibility necessary to give a clear line, firm and without raggedness. One may be content, in the absence of anything better, to add to a colorless matt varnish of commerce a tinctorial substance from aniline or vegetable colorings, provided that it is soluble in alcohol or in any other vehicle adopted for solubilizing the resinous elements. The following preparation may also be employed:

Sulphuric ether (ethyl oxid) .....100 cubic centimeters
Sandarac ..... 10 grams
Mastic .....2½ grams
Benzol (more suitable than benzine) ..... 30 grams

This varnish, after being decanted and filtered, is tinted a deep red by the addition of an appropriate coloring matter, as, for example, fucsin in alcohol solution, etc. One may find satisfaction also in ordinary collodion, with the addition of two to three grams of chrysoidine per one hundred cubic centimeters, but the drying of this collodion in a layer sufficiently dense and homogeneous is not always successful unless it is preceded by the albumenizing of the glass.

Of the technical execution of the drawing with the knife point, the author says nothing. That is a matter for the skill and taste of the worker. It is principally on the cleverness of the artist that the perfection and delicacy of the rendering will depend. The furrows traced in the colored varnish with which the reverse side of the negative is plastered are, of course, impressed as black or dark lines in the positive print. He finds it more easy to operate on a negative developed to a gray black than on a negative carried to an extreme black, and with the object of obtaining a suitably developed negative he uses amidol developer with the addition of boric acid, about two grains to each ounce of the solution. If in spite of the addition of boric acid the negatives are still too dense, the proportion of water may be increased, even to doubling, and the boric acid increased in a corresponding proportion. It goes without saying that the worker must be capable of making at will a negative soft and detailed.—*Amateur Photographer.*

Depth of Field

The matter of depth of field is one that is continually cropping up, mainly because the formulae governing it are capable of being analyzed and put together again in many different ways. Mr. Lockett suggests one method that, even if not quite so new as he claims it to be, is certainly not well known, though it has points that make it useful. The standard formula for ascertaining the hyperfocal distance prescribes dividing the square of the focal length by the f- number, and also by the diameter of the circle of confusion. Supposing that the f- number is the same as the number of inches that make up the focal length, then part of the formula is cancelled out, so that all we have to do is to divide the focal length by the diameter of the circle of confusion; or, as that diameter is a fraction, multiply the focal length by the denominator of the fraction, and so get the hyperfocal distance for the stop we have allowed for. Thus, if we have a five-inch lens, following this method we get at once the hyperfocal distance for f-5. Five-eighths of this result will give the distance for f-8, or five-sixths will give that for f-6. In this case we do not gain much convenience, and it is obvious that the idea is most useful when the stop allowed for is the one to be used. This will, however, only be the case with short focus lenses, hence the method is most convenient for cinematographers, for whose use Mr. Lockett more especially designed it. It is, however, also very readily applicable in the case of eight-inch lenses, and the users of these may find the method very useful.—*British Journal of Photography.*

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Those Olive Brown Tones

The olive brown tones we try to avoid are not exactly the ones we would recommend as a regular thing, but there was an amateur in here the other day with some olive brown prints that were very pleasing as to tone and as to the suitability of the tone for the particular subjects,—park roadways and the like. In blue-black they would have been too cold and in sepia they would have libeled the green of the trees. These tones were produced by adding one and one-half grains, or even a little more of potassium bromide to every ounce of the developer, making the exposure by soft, diffused light, and developing for two or three minutes; or, rather, so timing the exposure that development requires that length of time. Of course, the old principal that a correctly exposed print will come up about right in the developer and practically stop, holds good, but the heavy addition of bromide makes this longer time of development required for the correctly exposed print. That is, the print correctly exposed for such a developer.

Large Buckled Prints

A commercial photographer came into the office some months ago and showed me some samples of his large oil well scenes that he was in hopes of selling to the people in the oil industry here in the city. The prints were badly buckled and really looked quite bad, despite the fact that they were excellent work otherwise. The reason the photographer did not find their buckled appearance as objectionable as he should was, no doubt, because he was used to them as the regular thing in that line, just as some photographers fail to appreciate the falsity of coal black as a rendition of green in his landscapes. I commented on the possible ill effect of showing such samples, and later, as he found his prints would not sell as he expected, he realized that I might be right in my contention, that the badly buckled prints gave the work a very cheap, unattractive look to the lay individual, who was more used to seeing pictures having at least some approach to a flat surface. This man went back home, soaked the prints off their mounts, dried them, cut some tough manila wrapping paper the same size, and then remounted the prints on new mounts with a piece of the wrapping paper mounted on the back of the mount at the same time. It is really better to use the same kind of photographic paper for the back mounting, so as to assure the same degree of "pull" in drying and under change of temperature, but with these large prints that seemed to be too expensive. At any rate, the new set of samples, after being dried under pressure, were quite flat and smooth and the second round to see the possible buyers resulted in a neat number of orders.

Making Holes In Glass

The usual instructions for boring holes in glass advise the use of an ordinary carpenter's brace and a drill such as is used in boring holes in iron. A mixture composed of one ounce of turpentine, three drams of ether and six drams of ammonia is applied to the glass where the hole is to be bored and the point of the drill kept wet with the same mixture while drilling. To cut larger holes, it would seem that one would require a drill in the form of a tube with its cutting surface fitted with diamond chips or something of the kind. Possibly a piece of ordinary tubing, used as a drill, with emery powder applied to its end surface might cut a hole, one having a diameter equal to that of the tube. Somewhere we have read that a hole could be cut by placing some clay or putty on the glass, then working it away from a circular opening with a pointed stick or

something, and then pouring melted lead therein. It is said that the hot lead will go through the glass, leaving a hole the duplicate of that made in the clay or putty.

Unsatisfactory Glue

An Indiana reader has been having trouble with the glue that he uses in his framing and passe-partout work. The trouble is not in his method of melting or using it, but in the glue itself. The best test is to break a piece of the glue, either by bending it or striking it a blow with a hammer. If it breaks sharp and clean like a piece of glass, with smooth even edges, it is not of good adhesive quality and will not stand damp weather. The edges of the break should be ragged and splintered, the more so the better the quality.

Enlarging With a Single Lens

A reader in the South writes to ask if he can do enlarging up to 11x14 with a cheap single lens that is attached to his old 4x5 camera. The size of the enlargement does not figure in the calculation. All that he wants to know is whether or not the lens will cut a plate of the same size as the negative, or that part of the negative, that he wishes to enlarge. If his single lens will cut a 4x5 plate sharply to the corners, it will enlarge a 4x5 or smaller negative to any size desired. Of course, the fact that it is a single lens will result in more or less curvilinear distortion if the negative be one made with a rectilinear lens; but, if enlarging from a negative originally made with the same lens, we would imagine the distortion produced would tend to correct that in the original negative by reason of the same cause.

Copying a Faded Print

Really, the print was not so much faded as it was yellowed, but, of course, the image having turned a silky yellowish brown, it did look rather faded. But the copy, our friend, a recent visitor, had made from it was remarkable, was a great improvement over the original which had been brought to him for restoration. The method of procedure was as follows: Take a sheet of pale blue tinted glass and squeegee the print in contact therewith. When dried, set it up where no reflections appear in the glass and re-photograph, using an isochromatic plate. The print was, of course, one on the old printing-out paper so much in vogue only a few years ago.

Cement For Glass

An Indiana subscriber wants a cement for fastening glass into a metal frame, but fails to explain just the nature of the work he wishes to accomplish. Perhaps the mixture of gum and calomel will best serve his purpose, as it has remarkable adhesive powers and is used to fasten glass to metal in several trades. It is made by taking the best gum arabic and soaking it in water for about twenty-four hours or until it becomes of about the consistency of thin molasses. Using a glass plate and a spatula, calomel is added sufficient to produce the amount required for immediate use in the form of a sticky mass. This must be used at once, as it hardens within a very few hours.

Buy a Liberty Bond

The Government needs the help of every man and woman in the United States.

It takes two things to win a war—Soldiers and Dollars.

Men give their lives freely, but the Government does not ask anyone to give money. It asks for the use of the money only and it pays four dollars a year for every one hundred dollars that is loaned to it.

This Bond is simply a paper issued by the Government which shows how much of your money the Government has borrowed. You take this paper twice every year to any bank and your interest will be paid you; four dollars a year for every one hundred dollars you have paid in on bonds you have already subscribed to. The interest rate on the next issue of Liberty Bonds is not yet decided upon.

This is not a rich man's bond. It is not a rich man's war. Every man and woman and child in the United States must help win. If you buy a Liberty Bond you are saving money for your old age and you are also helping to save a soldier at the front. Your money is still your money, but it is helping to win the war and it is in safe hands.

You know you can trust the Government.

INTERNATIONAL PHOTOGRAPHIC ASSOCIATION

Officers of the I. P. A.

F. B. Hinman, President, 1369 South Washington St., Denver, Colo.

J. H. Winchell, Chief Album Director, R. F. D. No. 2, Painesville, Ohio.

Fayette J. Clute, General Secretary, 413-415 Claus Spreckels Building, San Francisco.

John Bieseman, Director Post Card Division, Hemlock, Ohio.

James B. Warner, Director Stereoscopic Division, 413-415 Claus Spreckels Building, San Francisco.

NOTE.—All stereoscopic slides sent to Director for the circulating sets must be mounted, titled, and show the maker's name and I. P. A. number on the back of mount. Notify the Director how many mounts can be used, and a supply will be sent you by return mail.

A. E. Davies, Director Lantern Slide Division, 1327 Grove St., Berkeley, California.

Arthur H. Farrow, Secretary Lantern Slide Division, 51 Richelieu Terrace, Newark, N. J.

STATE SECRETARIES

California—A. E. Davies, 1327 Grove St., Berkeley.

Idaho—Eugene Clifford, 902 9th Avenue, Lewiston.

Iowa—Harry B. Nolte, Algona.

Kansas—H. H. Gill, Hays City.

Mississippi—George W. Askew, Jr., 211 34th Ave., Meridian.

Missouri—J. F. Peters, Room 210, Union Station, St. Louis.

New York—Louis R. Murray, 21 Clark St., Ogdensburg.

Oregon—F. L. Derby, La Fayette.

Texas—Emmett L. Lovett, care Southern Electric Company of Texas, Wichita Falls.

Wisconsin—F. W. Freitag, 500 Monument Square, Racine.

Answers to inquiries concerning membership and membership blanks will be supplied by the State secretaries. Album directors are at present acting as State secretaries in such of their respective States as have as yet no secretaries.

NEW MEMBERS

4466—H. C. Hanck, Itasco, Ill. Class 2.

4467—S. B. Risdon, R. F. D. No. 5, Watsonville, Cal. Class 2.

4468—Richard J. Grace, 38 Bates Dock Building, Portland, Or. Class 2.

4469—Max Rickett, Box 715, New Providence, Iowa. Class 3.

4470—Victor S. Stephenson, Box 46, Rutherfordton, N. C.
Lantern slides only; for the same. Class 1.

4471—J. C. Magill, P. O. Box 130, Coquille, Or.
3¼x5½ and 6½x8½, developing papers, of beach, logging and general mountain scenery; for anything of general interest.
Class 1.

4472—Harry E. Carpenter, South Bend Road, Fairfield, Conn.
3¼x5½ and 5x7, various papers, of bathing girls, scenery, landscapes, and miscellaneous; for especially bathing girls, also landscapes. I wish to hear from Hawaiian members.
Class 1.

4473—Charles J. Noronha, care Welch, Fairchild & Co., Inc., Manila, Ph. Is.
3¼x5½, various papers, of views of Philippine landscapes and life, few historical and miscellaneous; for historical, artistic landscapes, athletics and speed pictures, babies, children and girls, portraits and anything of general interest. Prints only. Class 1.

RENEWALS

2285—C. A. Holman, care U. S. Dredge, Rio Vista, Cal.
Class 3.

2327—Horace Sykes, 1251 Center St., Salem, Or.
3¼x4¼, 3¼x5½ and 5x7, various papers, of choice mountain scenery, landscapes and marine views; for mountain scenery, historical subjects, characteristic landscapes, best quality. Good work only sent or accepted, prefer sizes 3¼x4¼ or 3¼x5½.
Class 1.

2780—Claude Bidwell, P. O. Box 154, Huntley, Ill.
3¼x4¼ and 3¼x5½, various papers, of farm, lake scenes, landscapes, with clouds; write first; for anything of general interest, views of mountains and scenery preferred. 3¼x5½ or smaller. Class 1.

3820—W. S. Cotton, care The Home Tel. & Tel. Co., Park and Burnside Sts., Portland, Or.
Stereos, printing out papers, of local, mountain, water falls, snow, park, street scenes; for same or will exchange negatives with Southern members, either stereo or single. Stereoscopic views or negatives only.
Class 1.

4033—Richard S. Foster, P. O. Box 3106, Bridgport, Conn.
Up to 5x7, developing papers, of landscapes and some good deer pictures; for views of general interest, animals, marines and good landscapes. Good work only in lots of 5 to 15 pictures. Class 1.

4328—Hubert R. Wiswell, Westbrook, Minn.
Various sizes of landscapes, birds and flowers; for the same. Class 1.

CHANGES OF ADDRESS

3133—A. E. Davies, 1327 Grove St., Berkeley, Cal.
(Was 695 61st St., Oakland, Cal.)

4193—Capt. W. H. Smith, Adjutant 125th Infantry, American Expeditionary Forces.
(Was Waco, Texas.)

4215—Roy H. Wagner, Route 1, Box 2, Comstock, Nebr.
(Was Chadron, Nebr.)

4256—J. A. Currie, 3424 West St., Oakland, Cal.
(Was 535 40th St.)

4285—John F. Carrigan, Humboldt, Ariz.
(Was Clifton, Ariz.)

4359—F. A. Harkness, 725 Edith St., Missoula, Mont.
(Was care Peterson Drug Co.)

4410—F. J. Davis, 228 Fairview Ave., Connellsville, Pa.
(Was 136 Fairview Ave.)

4440—H. J. Shipton, 32 Fisk Ave., Winfield, Long Island, N. Y.
(Was New York.)

4444—Alvin W. Ruck, Box 29, Y. M. C. A., Denver, Colo.
(Was Cedarburg, Wis.)

WITHDRAWAL

3687—A. Grootenboer, 414 North 10th St., Paterson, N. J.
For lack of time.

OUR BOOK SHELVES

"Colorado: The Queen Jewel of the Rockies"

The author, Mae Lacy Baggs, has, in this, the latest of the popular "See America First" series, demonstrated to the full her ability to give us, in a most entertaining and personal style, the fascinating tale of Colorado, the Centennial State; what it has been, what it is and what it will always be, as a land of fulfillment, a land of inexhaustible resources. Even the contents table reads as a romance, and a glance at the fifty-four plates, handsome duotones, charms one before the author has a chance to prove her own capabilities to combine instruction and entertainment in a most subtile and charming style. The Indians of the Rockies, the white man's influence, Pike and the other explorers, the era of the trapper and the trader, the finding of gold, the plains, the Rockies, the Silvery San Juan, the Valley of the Grande; these and hundreds of others are all given their proper place. The volume is a large, handsome one, uniform with the others of the same series now so well and favorably known. Published by The Page Company, 53 Beacon Street, Boston, Massachusetts. Price three dollars and fifty cents net.

"British Journal Almanac 1918"

A little late again this year, there comes to our desk the new edition of this popular annual, following its usual plan of the last few years. The leading article is an excellent and informative one by the Editor, entitled: "Miscellanea of Negative Making", which goes into the subject very thoroughly and exhaustively, occupying about twenty pages. The usual departments are as complete and instructive as heretofore, which is sufficient praise. As this annual has been rapidly sold out for the last few years, intended purchasers should not delay inquiring of their dealer for a copy. The price will be seventy-five cents for the paper-covered edition, and one dollar and fifty cents for the cloth covered one, postage being charged extra, according to zones. George Murphy, Inc., 57 East Ninth Street, New York, are the American sales agents, and both Hirsch & Kaiser and Marsh & Company of this city have large orders placed.

CLUB NEWS AND NOTES

California Camera Club

The Outing Committee has already started its work for the year, the first outing of the season, held the latter part of March, being well attended. The second outing, one to the shores of Marin County, where splendid picture possibilities are presented, is scheduled for this month.

One of the best exhibitions of pictorial photography, the work of one man, ever seen on the walls of the Club, was that of J. N. Doolittle's work, hung during the month of March. Mr. Doolittle won the gold medal at Toronto in 1917, and his pictures, aside from being artistic and pleasing, are well worth careful study, by reason of their masterly composition and treatment.

After the regular monthly meeting on the evening of March Twelfth, a beautiful set of colored slides, showing European points of interest, the work of one of the members, was thrown upon the screen. During the month there will be given, in addition to the regular list of events, a most instructive demonstration on portraiture and the various effects obtainable; the club studio and equipment being used for the purpose.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

John O. Tucker of San Jose visited San Francisco during March.

Guy Hess has given up his Eureka studio.

C. C. Boslaw has bought the Bliler studio in Fortuna.

Ned Seeley of Arcata was in San Francisco recently, but was again hard at work a week later.

J. H. Hunter, formerly of Santa Cruz, has located in Healdsburg.

Dr. Merriman likes Santa Rosa. He says it is because its so close to Petaluma.

Ernest Forsmark called on the writer the first week in March.

Tomy Thomson, formerly of the Blake studio, is now in the United States Aviation Service.

Mr. Green In Charge

"We have just heard that a change of management has taken place at the New York branch of Burke & James, Incorporated. This branch of their business is now in charge of W. Green, who has devoted the best part of his life to photography and photographic supplies. This should be of interest to the Eastern customers of the firm, as it is undoubtedly of advantage to know that their requirements are being taken care of by one who is well posted in every branch of the business. As Mr. Green is a silver-medalist as far back as 1890, there is no question as to his being acquainted with photographic requirements for the amateur, as well as professional."

Two Branches Consolidated

On the first of the year the Minneapolis branch office of the Ansco Company was consolidated with the Ansco Company, Chicago. This consolidation was made for the reason that most points in the territory formerly served by the Minneapolis branch can be served just as expeditiously from Chicago as from Minneapolis, notwithstanding the fact that distances are somewhat greater, and also because the Chicago house carries a very large stock to enable it to serve the great demand of the territory in which it distributes, making it able to serve its customers to better advantage at all times than could the Minneapolis branch. Customers in the district heretofore served by the Minneapolis branch are now being served from Ansco Company, 325 West Jackson Boulevard, Chicago, Illinois, where all orders for Ansco products should be sent.

Bob Ennis In New York

R. L. Ennis, formerly manager of the Boston branch office of the Defender Photo Supply Company, has been promoted to the managership of the New York branch, located at 13 West Twenty-ninth Street, that city. Mr. Ennis, through his several trips to the Coast, has made a host of friends, and these, we know, will join us in wishing him all success and continued good health and high spirits in his new field.

Get One If You Can

Some fifteen of the leading tile manufacturers of the country are banded together, to promote the use of tiles, into what is called The Associated Tile Manufacturers, with headquarters at Beaver Falls, Pennsylvania. This association has recently gotten out what is really a very valuable booklet of thirty-eight pages, illustrated with about two dozen illustrations, and carrying the title: "Some Suggestions on Photographs of Tile Work". The book is nominally published for the benefit of the dealer in tile who wants better photographs of his work than he has been obtaining. In other words, the book covers points that seemed worthy of note during several years' work in selecting photographs for advertising purposes, points that were thought would be of value to the tile dealer when instructing his photographer as to what was wanted, and again in passing judgment upon the photographer's success as shown in the final print. I am

not sure that the association will send out copies to photographers, but imagine it would do so if properly approached with a letter. It is certainly worth while trying, as the book is full of valuable information to any photographer making interiors, and it also gives him an excellent idea as to just what tile dealers and others want when they call upon him to make such work for them. This association is to be commended most highly for its enterprise in getting out a booklet of this kind, something that we lieve is quite new in its field, despite the obviously beneficial results of so doing.

Pictures Wanted

One of our contributors, Harry F. Blanchard of 65 Hudson Street, South Glens Falls, New York, does quite a nice business in the furnishing of photographic illustrations. In a letter just to hand he says:

"I am urgently in need of at least five hundred photographs showing new devices, new inventions, new machinery of all kinds, and pictures that show some home-made appliance that helps to lighten the work around the farm or home. Every photographer must know of or can find something of the kind in his locality that is out of the ordinary, something that has a little mechanical twist to its usefulness, and I can use photographs of such things. I need hundreds of photographs of this nature and the following list may be suggestive: The smallest or largest valve in the world, the smallest or largest sewing machine, a home-made device that makes it easier to develop a roll of film, a gate that closes itself, a handy tool for the artisan; in fact, anything new, it does not matter how small or how large it is. As these pictures are to be published they must be on glossy paper, and the sender should be sure to write a full description, one of at least fifty words, on the back of each print, giving his full name and address as well. Two prints of each subject should be sent, when possible, and if the pictures have ever been published, advise fully as to the paper or magazine in which they appeared. Anything that will be of interest to inventors and that will help other people to lessen their hard work, is wanted, and subjects of a technical nature can generally be used. Rush what you have at once. The payment will be one and two dollars each for suitable photographs, cash upon acceptance. Send postage for the return of the prints if not acceptable."

We can assure our readers of fair treatment at the hands of Mr. Blanchard, and those having, or in a position to make such pictures as he wants, should get in touch with him at once.

Increase Your Efficiency

W. F. Henry, the photographer in Vallejo, California, who has made a country-wide reputation for himself by reason of his beautifully colored photographs of our battleships and his other fine views, does no small amount of finishing work, and does it so well that the business steadily increases. He claims that much of this gratifying result is due to the installation, about a year ago, of the Perfection Developing Tank System, a system that reduces the cost, shortens the time, lessens the labor and improves the quality of the work turned out. And we have had like good reports from several of our friends here on the Coast who have installed these tanks to facilitate their film finishing work since the advertisement first appeared in our pages about two years ago. This two years' time has proven the system to be all, and more than is claimed for it, and any of our readers who now have or who intend going after film developing should write the manufacturers, the Northern Photo Supply Company, Department H, Minneapolis, Minnesota, for circulars covering these tanks. At the same time, ask for a copy of the book, "Commercial Photo Finishing", that the firm is sending out free of cost.

A Revised Price List

Due to the abnormal conditions prevailing, the lens manufacturers have been compelled to make an advance in prices and we have recently received a copy of the revised price list of the Bausch & Lomb Tessar and Protar lenses, the list being also important from the fact that it shows just what items the manufacturers can supply at the present time. The revised price lists are being sent out in connection with the booklet, "What Lens Shall I Buy?" that we described a few issues back, and advised our readers to send for a copy, because of the mass of valuable information that it contains. This booklet goes very thoroughly into the matter of the proper lens for every phrase of photographic

work, and while it is, of course, understood that the average photographer could hardly equip himself with a series of lenses that would comprise the very best for every class of work he might encounter, the information contained in this booklet will help him to realize just how near to suitability such equipment as he may possess approaches and suggests to him the most practical addition to his equipment for the purpose of enlarging his field. We would urge our readers to send for a copy of this valuable booklet, together with this revised price list, addressing Bausch & Lomb Optical Company, Rochester, New York.

Aerial Photographic Activities

Under date of February twenty-seventh, the Signal Corps advises that plans have been completed for the great enlargement of facilities for training and equipping the aerial photographic force for photographing the German trenches from the skies and keeping up to the last minute the large composite picture of the whole German front. Future facilities will be three times those at present existing and will be in full operation in three weeks.

The three schools now operating at Langley Field, Fort Sill and Cornell will be consolidated into one large school of Aerial Photography at Rochester, New York, where all the primary training will be done. Special equipment has been provided, with over one hundred instructors. The present schools will be used for special and advanced training, particularly for the Photographic Intelligence Officers who will accompany the planes into the air on special occasions.

The bulk of the training, however, will be for the developing and printing work, which must be done on a standardized plan under processes specially developed during the war, and often in great haste on special motor lorries close to the front and to the staff. After a month's course, the men will be given a short advanced training and immediately sent over seas for operation in the American sector.

Aerial photography has greatly developed during the war. During the single month of September, British official reports state that fifteen thousand eight hundred and thirty-seven aerial photographs were taken by the British alone. No new trench can be dug, no new communication system opened up, no new batteries placed but the ever-present and infallible camera above records it for the examination of the staff below. So piercing has been this work that camouflage has been developed as a protection, thus forcing aerial photography to even greater ingenuity.

Every sector of the front is divided into plots about half a mile square, each one numbered and entrusted to a squad of photographers who become fully familiar with it. As fast as the photographs are made, they are developed, printed, reduced or enlarged to a standard scale, and then fitted into their proper place on the large composite photograph of the sector. This work requires a large force of experts in developing, printing and enlarging, as well as in map reading and interpretation.

Cases are on record where only twenty minutes have elapsed from the time the photographer snapped his camera over the German trenches until his batteries were playing upon the spot shown. In that time the airmen had returned to his lines, the photograph been developed and printed, the discovery made, and the batteries given the range and ordered to fire.

The New Multiflex Enlarger

On another page will be found an announcement covering the new Multiflex "Condenserless" Enlargers. While the smaller sizes are admirably adapted to the work for which they are intended, we would call special attention to the larger or 8x10 size that is equipped with every convenience for the satisfactory production of the highest grade of enlargements from any negative up to 8x10 inches in size. The No. 5 Multiflex Reflector, used with this enlarger, accommodates a 500-watt nitrogen mazda lamp, this reflector fitting the ventilated body, which is constructed of substantial sheet metal and coated with the new Crystalex Japan, giving the enlarger a handsome, as well as indestructable finish. The negative holder is contained in a frame that can be revolved so that the projected image can be tilted to any angle after the negative is inserted, a most desirable feature enabling one to straighten up subjects that were taken with the camera not quite level. By the use of kits in this holder, any smaller size of negative can be used with the same ease. With this enlarger is supplied a

handsome and substantial easel, 24x30 inches in size, with tilting arrangement for correcting distortion in the negative. This equipment would seem to be all that the professional photographer could desire and with the ever-increasing cost of production that all manufacturers are being called upon to meet, the present price is no doubt one that cannot be long maintained. Those interested in an enlarging equipment, either for professional work or in connection with their amateur photographic activities, should write for descriptive circulars of the Multiflex Enlargers, addressing Simplex Photo Products Company, Richmond Hill, Long Island, New York.

Boosting the Thrift Stamps

Herewith we reproduce an advertisement extending across the width of five columns in a recent issue of the *Minneapolis Journal,* making quite an eye-compelling and impressive appeal. This, as the small line

A Thrift Stamp a Day
Puts the Kaiser away
A Thrift Stamp each Week
Makes His Knowship more Meek
A Thrift Stamp a year
and the beast's over here
This space used for
by C. J. Hibbard

Are YOU buying yours EVERY day?

below indicates, was paid for by our old subscriber and occasional contributor, C. J. H'bbard, the well known commercial photographer of Minneapolis, Minnesota. The buying of Thrift Stamps cannot be too strongly or too persistently urged, and Mr. Hibbard is to be commended upon his direct and forceful method of assisting in the good work by paying for the generous space and using it so effectively.

Illinois College of Photography

Herbert G. Salzgeber, class of 1915, of the Hammer Dry Plate Co., is in the Medical Corps of the army, somewhere in Missouri.

President Bissell has recently been in Washington, negotiating for a new Aerial School of Photography, to be located in Effingham.

We were rejoiced to learn that R. R. Wilmarth, class of 1915, who was in passage on the ill-fated ship "Tuscania", was among those who were rescued.

Mrs. Nannie Weir, class of 1908, will, in the near future, return for a post-graduate course. We shall welcome Mrs. Weir as an old friend, as well as a student.

Prof. Carl Barth of Davenport, a student of the photographic department, who is a professional music teacher, has organized a class in vocal and instrumental music, for practice after school hours.

Messrs. Scottow, Klaver and Montgomery are the latest additions to the Signal Corps, Photographic Department, from the I. C. P.

Owing to the freight embargo, placed on the railroads by the Government, the College was out of dry plates for a week. We are thankful that it did not last longer.

The Third Liberty Loan

The campaign for the Third Liberty Loan will be opened on the sixth of April, the anniversary of the declaration of a state of war between the United States and Germany.

The amount, terms and conditions of the loan are dependent upon further legislation and will be announced as soon as Congress has granted the necessary powers.

Secretary McAdoo chose the sixth of April as the day to open the campaign as the most fitting date to call for a patriotic response to the summons to duty to every American, to ask from the people at home the same fervent patriotism that actuates our gallant sons on the battlefield of France and on the waters of the Atlantic.

"Cash With a Kodak"

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THE ONCE AND A HALF
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A PHOTOGRAPHIC MONTHLY

FAYETTE J. CLUTE, Editor

CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

VOL XXV MAY, 1918 No. 5

Aquatic Sports and the Camera

By H. P. Saubert

With Illustrations by the Author

Not all photographers are interested in or equipped for speed photography, and not all interested are situated where aquatic activities are indulged. But as a form of speed work, the photographing of such subjects has much in common with that of other sports requiring rapid exposures and quick action, what I may be able to offer, as a result of my own experience, may be of value to others.

WATER SPORTS

In photographing aquatic sports the reflection of light from the surface of the water and the generally prevailing openness of the surroundings is an advantage not always enjoyed to the same extent in other speed work. But, on the other hand, these pictures are always taken under more or less difficult conditions; perhaps from a moving boat or from a springboard occupied by eager and enthusiastic onlookers more interested in their own good view than in the success of the photographer's efforts. As the best pictures are always secured during a competition, and when a crowd is in attendance, there is, of course, no room for a tripod camera and the paraphernalia so much in evidence with our friends of the pictorial and landscape class. One is, quite naturally, impelled to use a camera of the Graflex type, and such was used in making the pictures shown herewith. Quite often one must work under rather trying conditions; an interesting event may come off quite late in the day, the sky may be overcast with a shower threatening, the only available position may necessitate working directly against the light, and various other undesirable conditions may prevail. All of these the focal plane shutter of the Graflex camera seems to overcome to the greatest possible extent.

In the past, the amateur, the beginner, and even not a few of the more experienced photographers, have looked upon the Graflex as a camera that was complicated, that required long practice and no little skill before it could be mastered by an experienced photographer. But the falsity of this impression is being daily demonstrated by the results secured on every hand, as the outcome of the rapidly increasing popularity of this form of camera. The user of one soon finds that he can achieve a variety of photographic results far beyond those within the limitations set by cameras of the usual form of construction. A focal plane shutter can, of course, be fitted to the back of an ordinary view

A SCRAMBLE AT WATER POLO

THE SWAN DIVE

camera, and there are certain forms of finders that do much to assure the proper placing of the subject on the plate, but combined focusing and locating of the image is not achieved. There are other forms of shutters that give sufficient speed for much of this work, but the focusing must be either made a separate operation or arrived at by guess. With a small camera, one of the universal focus type, the depth of field is sufficient to remove this last difficulty to a certain extent, but the pictures made require enlarging, and this they will not always stand unless the focus has been set about right.

The first and most important individual feature of the Graflex camera is the focusing hood with the image-receiving groundglass below; enabling one to see the subject, full size and right side up, and sharp or otherwise, as the focus may be, with the opportunity of properly adjusting right up to the moment of exposure. It is, of course, impossible to focus instantly on a rapidly moving object that is to be caught at the same time; but one can, for example, adjust or change his focus for a diver as he goes into the air, and then catch him on the downward plunge with every assurance of his image being perfectly sharp. To do this quickly and directly, one should acquire the habit of keeping the lens or camera front just a little back, rather than forward of the point of estimated sharpest focus of the subject. Doing this one can achieve sharp focus by the simple expedient of always turning the focusing screw forward, rather than invite the delay attending a trial to determine in which direction the lens should be moved.

My own best pictures have been made with a Bausch & Lomb IC Tessar lens, working at f4.5, although I rarely, if ever, use the full aperture except under most trying light conditions. A stop of f-8 is generally sufficient, particularly when using exposures of one three hundred and thirtieth to four hundred

A COMEDY DIVE

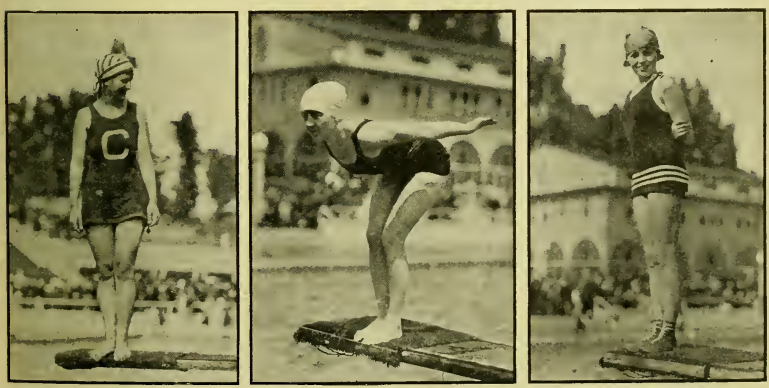
A STRAIGHT DIVE

and fortieth of a second. These exposures sound somewhat slow, and are even contrary to some of the instruction offered, but they give me some very fine results, and I much prefer having pictures lacking the soot-and-whitewash effects of under-exposure, even at the cost of an occasional slight blur where some hand or other member happens to be moving a little faster than the subject itself. For example, I have made a number of pictures of divers just leaving the springboard, and while the former was perfectly sharp, even to the extent of enlarging perfectly, the more rapidly vibrating springboard showed some little blur, a defect utterly unimportant and not at all worthy of a faster shutter speed and its attending under-exposure. The relatively small stop, f-8, could, of course, be enlarged, but that would make sharp focusing more difficult.

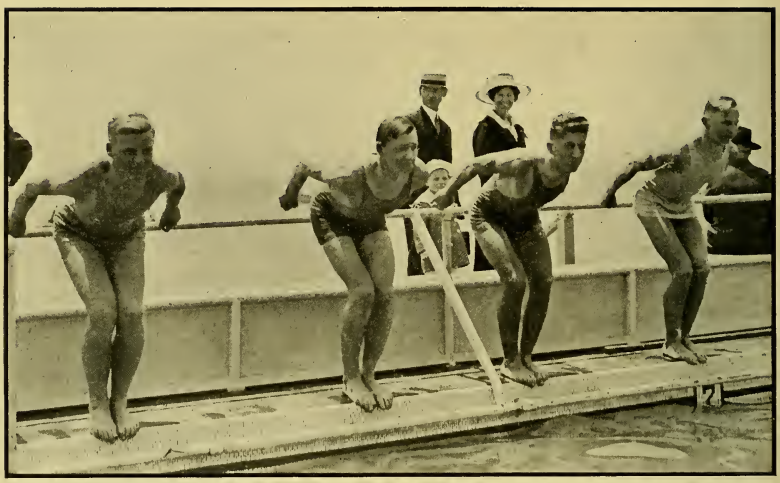
One must remember that while he can focus on, say the end of the springboard, the diver will be further from the lens as he rises in the air, and again, as he nears the water; and, the distance also changes with the action, except as the dive is made in a plane parallel to the front of the camera, and in this kind of work there is none too much time to be frittered away on the manipulation of the camera. The proceedings must be watched, and some attention given to the subject itself, while changing holders and winding up the shutter must not be neglected. Taking our divers, for example, one is perhaps twenty-five or thirty feet from his subject, the latter starting from a platform some twenty-seven feet in height, and as they follow each other in rapid succession, quick work is required, and they are not easy subjects to focus sharply.

A FEW OF THE POPULAR SWIMMERS

Now, if one were to undertake such subjects with the regular between-the-lens shutter type of camera, and attempt to use about the same lens aperture and exposure as I have suggested, he would no doubt achieve a near approach to a complete failure. As some reader might wonder why this should be the case, I will go on to the second, and no less important special feature of the Graflex camera, the focal plane shutter. This consists of a roller blind curtain, working directly in front of the plate, and hence the name, focal plane, and this is equipped with a series of slits or apertures of various widths. These last, combined with the varying tension of the spring that operates the curtain, gives exposures ranging from one-tenth to as fast as a one-thousandth part of a second. But the great advantage that a focal plane shutter has over those of the usual type will be appreciated when it is considered that the focal plane shutter permits the lens to work at its full efficiency during the whole period of exposure. That is why this shutter allows more light to reach the plate or film during the interval of exposure than any other shutter, which in turn



JUST A FEW OF THE FAVORITES



THE START OF THE RACE

permits one to take satisfactory speed pictures under conditions of light practically prohibitive with a shutter of the between-the-lens type that allowed the full efficiency of the lens only as it became fully open and before it starts to close, perhaps only a fractional part of the total time.

And do not let me give you the impression that the Graflex type of camera is only to be used for speed pictures; because, with its wonderful range of exposures and its splendid focusing abilities, one can obtain almost any class of pictures from the regulation landscapes and groups to the little ones and their pets, subjects so hard to photograph with any camera, especially as they are quick to discover that something is going on when they see Mr. Photographer with his head under a focusing cloth. How much easier it is to avoid all this disconcerting performance and stand in an obscure place, where the subjects can be watched through the lens hood and the picture taken at just the right moment, thus obtaining the desired pose or expression instantly and without any trouble.

And furthermore, as with the regular type of camera, one is not limited to any particular form of negative. He can use roll film, packs or plates with these cameras, just as he sees fit. Personally, I prefer and use the film pack, finding it amply fast enough and particularly convenient in the matter of reloading and carrying.

But the fact that Art has false worshippers, that a good thing can be misused, need not effect our judgment of Art itself, any more than it does in the case of Christian religion in all of the sects of which are to be found the cracked and hollow pillars of society, whose weakness cannot take away from the strength of the House not made with hands, whose empty masks cannot mar the memory of the Founder's face.—Ralph Radcliffe-Whitehead.

Doctoring Negatives

By Harry A. Brodine

With Illustrations by the Author

In the after processes of negative making, such as intensification and reduction much can be done to rectify errors of judgment in exposure and development. The most expert photographer often has recourse to "doctoring" in some form or other. I shall endeavor to set down the most practical and convenient methods in use by the present-day workers.

At the outset, it may be well to remark that hopelessely under-exposed plates or films cannot be saved by any ordinary means of intensification known at the present time. It is manifestly impossible to intensify something which is not in the film. However, as the inexperienced amateur is seldom sure as to whether doctoring will help the final result, it will perhaps be best to give any doubtful negative the benefit of the doubt.

While a very greatly under-exposed plate or film is difficult to correct to any satisfactory degree, the same cannot be said of greatly over-exposed plates, especially if the over-exposure is known before development. There are a great number of formulae for the intensification and reduction of negatives; but I shall only deal with those which in my experience have produced the best results.

At times it is advisable to locally reduce or intensify certain portions of

A SPLENDID PLACE FOR A SWIMMING POOL

the negative. In the case of portraits, this is especially true. When white or very light clothing is to be rendered as it seems visually, the problem is not quite so simple as it may seem. The local reduction of light drapery is generally the stumbling block of the amateur. And well it might be. The professional photographer must render light clothing, such as wedding gowns with their lace and other frills, in a manner to show the character of the material. This is not the only part that reduction plays in assisting the photographer. In cases where clouds have been present in a landscape view, and through faulty technique the high-lights have been blocked up and thereby permitting only white paper to represent the sky, recourse should be had to local reduction. Similarly, any other case which might seem the same in general character, will be benefited by this treatment, which I shall explain at length in the latter part of this article.

Intensification is a trifle simpler process than is reduction. It is easier to rectify mistakes in intensification than it is in reduction, for the reason that when the plate is once reduced too much, or streaks and stains occur, the plate is ruined. In intensifying, this is not the case to so great a degree. It should be understood that slipshod methods are not permissible when intensifying, even though they may not prove very harmful.

The most commonly employed reducer is that known as Farmer's reducer. It is composed of red prussiate of potash, or potassium ferricyanide, as it is also called, and hyposulphite of soda, or more commonly, hypo. These chemicals are mixed in various proportions for different results. When there is a large amount of hypo in the reducer, the high-lights are reduced to a greater extent than when the red prussiate predominates. The amount of red prussiate governs the rapidity of the bath; but while it does so in strong solution, the shadows will be attacked much more than the high-lights. In short, when negatives with thin shadows are to be wholly reduced, recourse should be had to a solution containing an excess of hypo. This will also enable the inexpert worker to control the reduction of the plate more readily.

The persulphate of ammonium reducer has been advocated for negatives which are very thin in the shadows, and I shall explain its advantages at length, together with other methods of reduction. In ordinary cases of over-exposure, the most commonly employed reducer is that composed of red prussiate of potash and hypo. The professional generally prepares these in the form of two saturated solutions. A saturated solution is of such strength that, when a certain quantity of a given chemical is added to a certain amount of water, there will always be some undissolved crystals at the bottom of the bottle. This is a very convenient form in which to prepare solutions, when they are to be used in quantity. For the amateur, it is advisable to mix solutions by weight, as there is less liability to mix more than is needed for the work in hand. The following formula has been found to work very well in my hands:

No. 1:	Hyposulphite of soda	1 ounce
	Water	10 ounces
No. 2:	Red prussiate of potash	1 ounce
	Water	9 ounces

These solutions should be kept separately until required for use, as they do not keep very well when mixed. It is very much cheaper to mix one's own reducer, and in practice, it will be found to be a very convenient form for preparing the desired amount of solution for the work in hand.

To proceed with the operation of reduction, little practice is necessary. An enameled tray is most practical as a container for the bath, and it should be used only for the one purpose. Trouble may arise if it be used for other purposes, such as developing or intensifying. If, however, they are always thoroughly cleaned after use, then they may be employed for varied purposes without fear of spots or stains.

AN ENGROSSING STUDY

Two ounces of solution No. 1 should be poured into the tray and then from one-half to one ounce of the No. 2 or red prussiate solution should be added, finally adding ten ounces of water. For negatives that are thin in the shadows, add half an ounce of the red prussiate solution, and for those negatives which seem evenly balanced, add one ounce. To reduce the negative, which may be done immediately after fixation and only a slight rinsing in water, when haste is a consideration, proceed as follows: Immerse the plate in the solution for about ten seconds, and then rinse quickly under the tap. The rinsing of the plate should not be omitted, as it is a preventative of stains and streaks. It will be noticed on examination that the plate has become thinner and all that is then necessary for a general reduction of the plate is to repeat the above operations until the desired result is obtained. After this, wash well and dry as usual.

In some cases it is desirable to reduce only a small portion of the negative. This requires a trifle more care than when complete reduction is the aim. The reducer should be used at half strength, that is, one-half ounce of the red prussiate solution and one ounce of the hypo solution with ten ounces of water. A tuft of absorbent cotton is necessary to reach the portions of the negative which are to be reduced. Only a small piece is needed, and it should be rolled lightly in the form of a ball or pad. It is then saturated with the solution, and,

holding the negative up to the light, gently dabbed on the parts desired, for a few seconds, after which the plate should be rinsed. Repeat the operations until the necessary reduction is obtained, rinsing frequently. In this way objectional high-lights can be toned down to the proper degree, a result that is a great aid to the pictorial, as well as the commercial photographer. Care should be taken that none of the chemical is spilled on the clothes, as the red prussiate leaves a stain difficult to remove.

Sometimes it is necessary to reduce negatives that have been over-intensified. If the intensifier used was the familiar mercuric chloride, this is very simple. The plate should be immersed in a two per cent solution of thiosulphate of sodium, mixed as follows:

Sodium thiosulphate (or hypo, the same thing)..... 1 ounce
Water ..... 49 ounces

WHERE SHALLOW WATERS WEND THEIR WAY

At this point, it is well to mention the fact that thiosulphate of sodium is the correct name for the commonly termed hypo, the latter being, in reality, the proper name for quite a different substance. With the above solution the reduction of the mercury intensified negative is certain, and there is no liability of stains occurring. In cases where hypo is not at hand, sulphite of soda, in the proportions of one ounce of sulphite to ten ounces of water, may be used. Cyanide of potash may also be used in the proportion of one ounce to three hundred ounces of water. It is, however, best to stick to the first two mentioned chemicals, as they are not dangerous to handle. Cyanide of potash is a rank poison, two grains being a fatal dose. Being corrosive, it is even deadly when absorbed through cuts or abrasions in the skin.

Very greatly over-intensified negatives may also be reduced with the Farmer's reducer, as explained above, and also with the ammonium persulphate

reducer which I shall now deal with. This last has the properties of acting on the densest parts of the negative more strongly than on the shadows, and for this reason it is particularly adapted for the treatment of negatives that are too contrasty. It may also be used for local reduction as in the case of the red prussiate or Farmer's reducer; but this is not necessary except in cases of extreme contrast. The working solution is made up as follows:

Ammonium persulphate	240 grains
Sodium sulphite	96 grains
Sulphuric acid	48 minims
Water	10 ounces

The negative should be washed well, and then placed in this solution until the desired result is obtained. It is then immersed in a five per cent solution of sodium sulphite to stop further action of the reducer.

THE BEND IN THE STREAM

A very good and inexpensive reducer for softening the gradations of contrasty negatives is the following:

Water	10 ounces
Copper sulphate	225 grains
Sodium chloride (common salt)	225 grains

The wet plate of film is placed in this bath, and the tray rocked until the plate has become white throughout with no black spots showing. After this, it is washed and developed in any developer excepting ferrous oxalate. These operations may be carried out in daylight. The plate should remain in the developer until it is evenly black on the back and the surface has a grayish white color. It is then placed in the fixing bath, and washed and dried as usual.

Intensification, as said before, is a very simple process. Ready made intensifiers are procurable of the dealer, and for those who have only occa-

sional use for such they are very convenient. Most of them are ready to use with the addition of water. However, as it is so simple to mix up one's own intensifier the advantage of buying it ready made is hard to see. The following formula is an universal one.

Potassium bromide	120 grains
Bichloride of mercury	120 grains
Water	12 ounces

It is best, in mixing this solution, to use hot water, as the mercury is very slow in dissolving in cold water.

The negative should be thoroughly washed before intensification, and there should be no trace of hypo in the film. If hypo is left in the film, due to imperfect washing, stains will occur.

The solution should be used when cold and for a general intensification, the plate should be immersed until the necessary strength has been obtained. It will be noticed that as intensification proceeds, the plate becomes bleached; but on examination a decided gain in strength will be apparent. After the required stage is reached it is only necessary to place the plate in a solution composed of one ounce of sodium sulphite in ten ounces of water, and when thoroughly blackened, wash and dry as usual.

It is always best to swab the surface of the plate, after intensification, with a tuft of absorbent cotton, so as to remove any scum which has adhered thereto. At this point, it is well to mention the fact that bichloride of mercury is as deadly a poison as cyanide of potash. There are ready made preparations for intensifying on the market which claim to be non-poisonous; but in my hands the bichloride of mercury has never caused any trouble.

As to local intensification, which may be thought best for a particular negative, the proceedure is practically the same as when local reduction is attempted. The selected portions of the negative are dabbed with a tuft of cotton dipped in the intensifying solution, and when the parts have reached the required density, it is only necessary to blacken the plate, as in ordinary practice. The operations may be repeated should the maximum amount of density be required. When the intensifying solution has become cloudy, it should be discarded.

A method of intensifying which has gained in popularity on account of its two-fold use, is by the means of re-development. The same solutions that are used in the re-development of developing and bromide papers are employed. In this process the entire image is built up evenly, and in this case it is sometimes an advantage. The manner of using the solutions is exactly the same as when re-developing prints. They are quite cheap, and for those who may desire to prepare their own solutions, the following formula is given:

Ferricyanide of potash	100 grains
Bromide of potash	100 grains
Water	10 ounces

Bleach in the above bath until the shadows are nearly bleached away. Rinse the plate, and then darken in the following:

Sulphide of soda (not sulphite)	50 grains
Water	10 ounces

ROADSIDE TREES IN BLOSSOM

The plate darkens almost immediately; and, when an even tone is reached, wash and dry as usual.

It is essential that a good grade of sodium sulphide be employed and the work should be carried out in a well ventilated room, the sulphide having a rather disagreeable odor. These solutions may be used in exactly the same manner for re-developing bromide and developing paper prints.

Quite often the employment of a paper suited to each particular negative will give a presentable result. Hard bromide and gaslight papers printed in a weak light and at a relatively long distance from it will, with full exposure and normal development give a fair result from a very flat negative. Some time ago I described my method of printing from negatives which required only slight help to make first class printers. No chemicals are necessary.

If you have a negative which is dense in the high-lights with good detail in the shadows, the best way to print from it would be to obtain a few sheets of printing tissue paper, and paste one sheet over the printing frame. Insert the negative, pushing it snugly into one corner and hold to the light, looking through it. After this take a soft pencil and lightly trace around the densest parts such as a snow-covered foreground or a bit of strong drapery in a portrait. When you have traced the various parts, cut all of them out with a sharp knife. After this paste another piece of paper over the frame. Should there have been many pieces cut out of the first piece of tissue, the "doctoring" marks may show. It is necessary to lightly tip the loose pieces of the first piece of tissue to the second, so as to allow the light to diffuse sufficiently while printing. If the work has been carefully done, the print will not show the dodging, and will be superior to one made by straight methods. It is much simpler to do the actual work than this discription would indicate.

Groundglass varnish is often used for the same purpose as the above, and it is very simple to handle. The varnish is poured over the plate, and when set those parts which are to be favored may be scraped away with a pen-knife. With the groundglass there is no necessity to remove the varnish after the plate is once prepared, provided the plate is kept free from scratches. This is an advantage over the tissue paper method. With the tissue paper method, several frames are required when many prints are to be made, while with the other, as many plates may be treated at one time as found necessary, and all then printed as rapidly as in ordinary work. When it is desired to use the groundglass method with films, they should be stuck down at the edges to a piece of glass and the varnish flowed over the back of the latter.

The arts reflect each other; the terms which are applied to the arts are borrowed from each other. We speak of the tone of a picture and the color of a piece of music. The sculptor must have a sense of color and music or his work will be cold. Each art may definitely require a special set of faculties to be trained, but these are co-relative and must be brought into harmony for power in any one art. Hence a certain amount of training in different arts develops the art capacities and enables the mind to grasp the elements that are fundamental in all arts.—S. S. Curry.

Other examples of Kite Photography by S. Parks, made as described in article on the subject in our April issue. These two were made with an ordinary box camera fitted with a simple meniscus lens, from an elevation of about seven hundred feet, on a vibrating kite string. The day was somewhat cloudy with a fifteen mile wind blowing. The reader will observe how well the two pictures map the location in which the church, shown in both prints, is situated. These, compared with one of the former illustrations, show the progress of construction of a new Federal building, suggesting the adaptability of this form of photography to the recording of various stages in any changes being made.

Shooting Marshal Joffre

By Edward Larocque Tinker

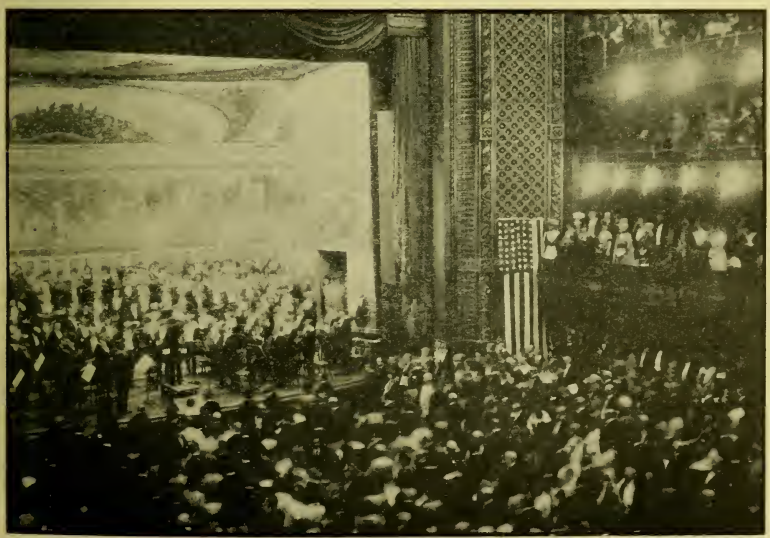
With Illustrations by the Author

"Of course I will, the lighting may be good enough for me to get something", said I. "Well, you better not, the place will be full of secret service men, and you will probably get into trouble if you do", was the advice I received. Not heeding it, I slipped my trusty little Icarette, together with a few rolls of film, in my pocket; and went gaily on my way to the Metropolitan Opera House, where the reception to General Joffre was to take place.

The first thing that made me want to take a picture, were the French sailors who greeted you upon your entrance, selling programs. They looked so unhappy, awkward, and out of their element. However, I refrained. I knew I had to hold my fire for bigger game.

The tiny God that presides over the destinies of all enthusiastic photographers, must have had a hand in the picking of our box, because it was one tier above, and ten boxes to the left of the flag-decorated box of honor, just where I could get an unobstructed shot.

After a while the Metropolitan Orchestra came upon the stage, and as I



"THE STAR SPANGLED BANNER" Copyrighted By EDWARD LAROCQUE TINKER

watched them play "Patrie", the picture of it appealed to me. If I could only get the orchestra, framed by the stage, with a suggestion of audience in the foreground, and the tiers of boxes on one side! The lighting was very dim, no footlights; but, to balance this, I had a three-inch focus lens, working at f-4.5, and the positions of the faces of the orchestra, their white shirt bosoms and the music on the stands, hardly changed, only their hands moved much. With such a short-focus lens, aimed at people three hundred and fifty feet away, this motion would not interfere to any great extent. Anyhow, what I wanted was an impression of an orchestra playing to an audience, not a detailed, pictorial record with every shirt-stud present.

Well, you cant' tell 'till you try; and so very quietly and furtively, in order not to attract the attention of any secret service sleuth, I slipped my little box on to the velvet-covered rail. Of course, I could not use any finder, so trusting to my general sense of direction, I opened the shutter and gave a fifteen-second exposure, while, all the time, the orchestra continued to play merrily on. As soon as I had clicked my shutter closed, I drew a long breath of relief, and sneaked my camera back out of sight again.

Emboldened, I took a shot at Jacques Thibaud, when he came on the stage and was playing an Havanaise.

Then two gorgeously costumed flunkies pushed a grand piano onto the center of the stage, as a preliminary to the appearance of Paderewski, who, by the way, always looks to me like an animated floor mop. The lights were very low, but the gleam of his face, the dead white of the keyboard, the dark shadows cast by the piano, and its open top, the mystery of the silent thousands in the semi-darkness, with their attention riveted on the flood of sound, all this formed an irresistible temptation for me, and I fell.

As Paderewski played a second time, the event for which everyone had been restlessly waiting, occurred. Joffre quietly appeared in his box. Everybody jumped to their feet, and pandemonium broke loose.

The General was a remarkable figure as he stood, impassively dignified in the front of his box. His complexion was ruddy, a striking contrast to his white hair, worn short and straight up; his eyes, under bushy white eyebrows, were decided, though kindly. No one could tell about his mouth, because it was hidden by a heavy white moustache, but the point of his chin showed underneath, with a very determined line, while character was also shown in his nose, which, though rather coarse, was very strongly modeled. The thing that you noticed first about the man—that struck you between the eyes—was his power to inspire confidence. It was this quality, plus his tenacity of purpose, that had saved France in her hour of greatest danger, because they had enabled him to inspire his subordinates, and through them the whole French army, to accomplish the impossible.

As I watched him, I thought, "What a picture!" I had been so carried out of myself that I had quite forgotten my camera. Fumbling in my haste, I balanced my little box on the rail, and aimed at the General, as he was quietly standing receiving the homage of the audience. I have always heard of buck fever, that dread disease that attacks hunters and makes them tremble like a

GENERAL JOFFRE AT THE METROPOLITAN
Copyrighted By EDWARD LAROCQUE TINKER

leaf in the wind when they first aim at big game. Well, buck fever got me in its grip, and shook my hands as with a palsy. I left my shutter open until I noticed the first symptom of motion in the General. I actually counted six seconds, but it seemed more like six hours. Every instant I expected to feel the firm grip, on my shoulder, of some secret service agent, who had made the mistake of thinking that my innocent little camera was some sort of infernal machine aimed at the General.

After Marshal Joffre had thanked the audience for his reception in a few simple words, the orchestra played the "Marseillaise". Immediately the General came to a rigid salute, and I got another opportunity for an exposure of about ten seconds.

The Metropolitan Opera Chorus sang the "Star Spangled Banner". The scene thrilled me, so I turned my Icarette partly at the stage, and partly at the audience; praying all the while that I would be able to freeze upon my film at least a tithe of the patriotism and excitement that stirred the whole house.

I had had thrills enough taking my pictures, but they were as nothing to the excitement of seeing the first slight images beginning to appear, as my film slid through the developer. I had told myself again and again that I could not have gotten anything—that the light was too bad—the exposure too short —that there had been too much motion to produce anything but a blur, etc. Imagine my happy surprise when the whole film developed up into strong, clean-cut negatives.

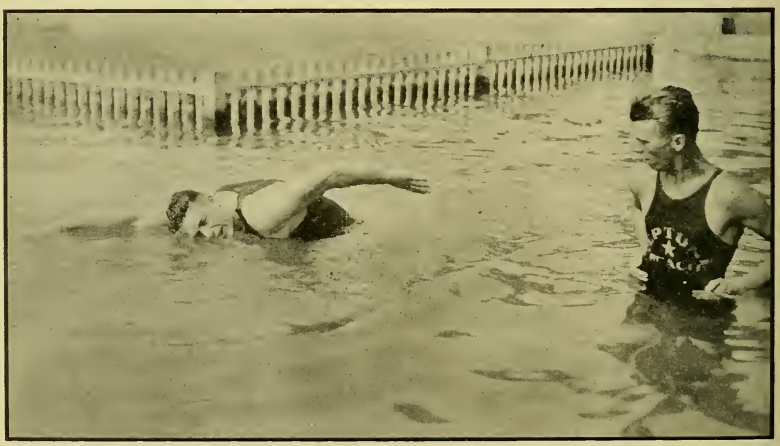
Later came more joys, those of enlarging,—the hours spent in dodging to get the best of the negative into the finished enlargement.

For the two pictures of Joffre I used a sharp lens, because I had to enlarge so much that the pictures were too soft anyhow. But, for the pictures of the audience and stage, I put a soft-focus lens in my enlarger, as I wanted to pull a film of tone over the harsh spotty whites of the shirt fronts, and the sheets of music on the musicians' stands. The prints made this way gave me more pleasure than the glossy hard ones, that I am afraid, the cruel editor will force me to supply for reproduction.

I discovered later that various of the monthly magazines had had whole batteries of their photographers there, without securing a single picture. In my humble opinion, the reason for their failure was wrong equipment. They probably had Press Graflexes with long-focus lenses. In that light a time exposure was absolutely necessary, but they had no place on which to rest their cameras, and no tripods. Then, too, a long-focus lens will show any motion in the subject much more than a short one will under the same circumstances. There is still one further reason. A professional is hampered by the traditions of his guild. One of them is that you can't take that kind of a picture without a flashlight. An amateur knows less and consequently is not so hampered, which results in his often trying the impossible, and sometimes succeeding where the professional fails.

This little experience of mine, has opened to me a new and fascinating field for my hobby, and I am looking forward next winter to combining two pleasures, —the drama and photography. I shall sit in the front row of the balcony— where I can find a railing to rest my camera on—and register my impressions of the play in a form, that, even long afterward, may serve to vividly recall the pleasure I took in that particular performance.

The imagination is the supreme intellectual faculty, and yet it is the one which receives the least attention in our common system of education.



THE SWIMMING LESSON By H. P. SAUBERT

White Background Effects

By H. J. Durward

With Illustrations by the Author

I have been interested in photography for a number of years, in fact, having gone through the various stages of photo-mania which affect the beginner, find myself now as keen, or keener, than at first. Noticing that portraits with white backgrounds were becoming fashionable, and finding that they were not easily secured, I began experimenting, on my own account, in an effort to get the results I wanted. I also asked Mr. Clute for information, and he referred me to Mr. Sprague of Bellingham and Mr. Gibson of Victoria, from whom I obtained valuable advice as to the best methods of securing effects I desired.

As to the actual background employed in this work, many professionals use a bluish-white instead of a plain white one, but I have found the latter to give quite good results. As the average amateur has not sufficient room to store a background mounted on a frame, an ordinary white sheet will be found satisfactory, provided it is hung straight and without folds. The important part is to keep it somewhat shaded, as lack of density in the background part of the negative is generally due to its becoming over-exposed, while the darker clothing of the sitter is being given the necessary time.

The picture of the boy was taken in an ordinary room, where a slightly cream-tinted wallpaper served as a background. The other two were taken on the shady side of a house, with a sheet, as suggested, tacked up for a background. The yellow tinge of the first prevented over-exposure, and the fact that the sheet against the side of the house was naturally in deeper shade than the subjects in front, equalized exposure in those cases.

After the sitter has been photographed in front of the white background; and by the way, my method is better suited to head-and-shoulder portraits than to full-length ones, the plate should be developed to a fair density, so that the background will be dark. The next thing to be done is to print the negative and for this a vignette must be made.

Take a piece of cardboard a little larger than the printing frame, and cut out an opening shaped roughly like the head and shoulders of the sitter, only slightly larger. Paste a sheet of tissue paper over this opening, place the negative in the printing frame, adjust the opening of the vignette over the image, tissue side out, tacking it in place. Holding the frame with the vignette facing the light, take some opaque,—red ink will do, and paint out on the tissue paper all except that falling within the outline of the figure.

As to printing, while some amateurs use printing-out paper of the self-toning variety, for the best results in this work, gaslight paper is far superior. With the former, and with the vignette over the front of the frame, the print-

ing takes so long that the light is apt to spread where it is not wanted, getting under the edges of the vignette and degrading the clear outline on which the beauty of these prints depends, especially if the negative be a thin one. With gaslight paper, the printing time is so short and the light falls from so straight in front that there is less danger of its getting under the edges of the vignette.

After the prints have been washed and dried an additional sparkle can be given them by rubbing the surfaces with methylated spirits; or better still, with a solution made by adding one-fourth ounce of borax to two ounces of boiling water, and then, when cold, adding four ounces of methylated spirits. When rubbing either of these on the prints care must be taken that the surface beneath is a flat one, so that the pressure will be even and the distribution uniform.

Following this method, very good effects can be obtained by printing on paper somewhat larger than the negative, these white background effects lending themselves admirably to wide white margins. Where standing figures are attempted, a white extension or floor cloth should be used in connection with the white background and care taken that the shadows at the floor are handled so as to suggest a support for the figure.

The Ideal Studio Light

By W. G. Earle

CHILD PORTRAIT By WADDS BROS.

The ideal studio light! What is it? A good north skylight, if unobstructed, is almost ideal, at least between the hours of ten and two on bright days in May and June, when fully timed exposures can be made in from one-half to one second. Earlier or later sittings require longer exposures. The light at eleven a. m. in December, just when the holiday rush is on, is no stronger than it is at five p. m. in June; while at three p. m. in December it is practically too weak to be available, except where quite long exposures can be given. And so the light fluctuates with every month, every day, every hour, and every variation of atmospheric conditions, from bright sunshine to clouds, rains, snows, and fogs. This variation makes errors in the timing of exposures inevitable, resulting either in resittings or faulty work.

Electric lights in varied forms have been tried with varying degrees of success. Some of them have been found wanting in uniformity of their light, owing to fluctuations in the strength of the current, and with some forms the subjects are unable to maintain a natural expression under their penetrating light, and all things considered, the electric light can hardly be said to have, as yet, established its superiority over daylight.

Every candid, thoughtful and practical operator must admit that the ideal light is one having sufficient strength to produce a fully timed negative every time, day or night, rain or shine, with absolutely no variations in the "timing". It should have such speed that any ordinary movement of the subject during the exposure will not show, say one-thirtieth of a second. Such a light should be under perfect control and permit the production of any style of lighting.

My judgment and experience leads me to believe that there is but one light that embodies these essentials, namely, that used in the Victor Studio Cabinet, namely, flashlight. As used, this cabinet combines the advantages of a soft electric illumination for focusing, and the securing of the desired light effects, together with an instantaneous exposure.

DOROTHY By JENNIE PATTERSON

I purchased one of these flash cabinets just before the holiday season of last year, and it has proved itself an indispensable addition to my equipment. It is always dependable and relieves me of every doubt and anxiety in my operating. I am absolutely sure that every plate I expose is correctly timed, free from blur caused by movement, and I am also certain that I have caught both the desired expression and the modeling which I saw when I pressed the bulb.

I have also found my operating expense less than when I depend upon daylight, owing to the practical elimination of resittings, this last resulting in a saving of plates worth many times the cost of the powder used, to say nothing of the time. I also find that I can get any desired lighting much quicker with the cabinet than under the skylight; and by moving the cabinet and head screens, instead of my sitter, I can work to better advantage than when manipulating curtains and reflectors. I should, however, confess that for a number of years after its introduction, I failed to realize the value of this most efficient equipment. And now, after months of experience in its use, I feel that I could not get along without it, and that I should call it to the attention of my numerous fellow members of our craft, who are still overlooking its merits. I firmly believe that anyone who will install a Victor Cabinet will find, as I have, that he can do more, and better work than he formerly did with whatever form of illumination, either natural or artificial, he may have been using.

The photographer who has an idea that flashlight work means harsh, contrasty negatives, can easily convince himself of his error by making a few experiments, using a convenient subject and any simple firing device, some evening in his studio. A tin pan on a stepladder will hold the powder, and a match tied to the end of a stick will serve to fire it. If possible, have a reflector behind the flash to throw the light towards the sitter. Even with this crude arrangement, the negative will be soft and pleasing, with modeling in proportion to the skill used in placing the light, head screen and reflector, according to the effect desired.

If the results are otherwise, either too small a stop or too little powder has been used. In other words, the negative has been under-timed. And here is where the mistake is made. An under-timed flashlight negative looks different from one under-timed in daylight and the operator wrongly assumes that the lack of good quality is due to some special fault in the light. Instead of faults, the light of the flash has its own special virtues. Texture in flesh and drapery is rendered by it in a way hard to approach with daylight, the quality of the light is such that retouching is lessened; and, best of all is its quality of being always the same in actinic value. So many grains of powder at a given distance gives a certain amount of light on the sitter and all guess-work is made unnecessary. One is not constantly trying to harmonize his exposures with the light; he simply increases or decreases the light by changing the amount of powder used. The exposure remains the same.

"That man cannot live by bread alone", is an old and true saying; we are, in this twentieth century, more apt, perhaps, to forget that neither can he live by intellect alone. Mere cleverness will not suffice; neither much learning nor much *cuteness* makes a man wise. That which the older psychologists called the emotions require as careful attention for their sane development and are as real a factor in human life as anything which intellectual training can affect. We have accustomed ourselves to despise instinct and to respect intellect until we have forgotten that man's strongest and noblest actions are those which issue directly from his inner nature, and that they are derived from that power by which the blood circulates, and by which the tissues are formed without the sanction of a syllogism.—Ralph Radcliffe-Whitehead.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

SURFACE DRYING PRINTS: The other day I was looking for something to use in drying a few prints, and there being neither the regular lintless blotters or a clean linen towel at hand, I thought I would try a couple of thicknesses of this paper toweling now so much used on account of its cheapness and convenience. I found this material to be a good substitute for the lintless blotters, and pass on the tip which may at least be useful for an emergency.—C. A. H., California.

DETERIORATED PLATINUM: Some reader may have on hand platinum paper that has gone stale through dampness, yet desire to use it up. If he will add a drop or two of potassium hypochlorite to a small trayful of developer, he will find that so doing will result in much better prints than he could otherwise secure.—H. J. K., Ohio.

REMOVING OLD PUTTY: The photographer often has occasion to remove a broken pane of glass from a door or his skylight. Cutting out the old putty too often results in a ragged looking job through cutting into the wood. A better plan is to buy a little nitric or muriatic acid and paint it over the old putty to be removed. In about an hour the putty will be found soft and quite easy of removal.—W. E. R., Florida.

A CHEAP SILVERING PROCESS: Brass and copper articles can be given a silver coating by first cleaning them thoroughly and then moistening and rubbing on a little of the following mixture: Three drams of chloride of silver, twenty drams of powdered cream of tartar and fifteen drams of well powdered common salt. After applying, rub with prepared chalk on a cloth, finishing by washing with water and polishing with a dry cloth.—E. R. T., Georgia.

A VERY FINE REDUCER: A reducer that is excellent for harsh negatives is made up as follows:

Water	16 ounces
Permanganate of potassium	20 grains
Sulphuric acid	½ dram

Place the negative in this solution until sufficiently reduced, then rinse well and dry.—G. H. J., Missouri.

CRACKS IN WOODEN TANKS: Melt six pounds of lard and three and one-half pounds of beeswax over a gentle heat, then stir in four pounds of common salt, and when these are thoroughly mixed, add four pounds of sifted wood ashes, stirring all well together. This preparation should be used while hot and is excellent for filling cracks in tanks, tubs, barrels and other wooden vessels. --C. V. B., New York.

RETOUCHING DOPE: The best retouching medium I have ever used is made up as follows:

Oil of turpentine	6 ounces
Oil of spike lavender	2 ounces
Pale rosin	4 ounces
Linseed oil	32 minims
Terebene	80 minims
Amyl acetate	1 ounce

This gives a beautiful surface to work upon, does not become gritty or slippery under the pencil, and allows of a second application when necessary without the attending trouble of other midiums.—F. G. H., New Jersey.

GROUNDGLASS EFFECT: I have two glass fitted doors on which I have tried both salts dissolved in water and the often recommended brush stippling of white paint. The first was too easily damaged and the latter always looked cheap and irregular. Recently I tried a new formula, namely, pumice stone in varnish, and it gives the best of satisfaction. Get a quart of good, elastic varnish, add to it a couple of pounds of finely ground pumice powder, and flow the mixture over the glass. It gives a good imitation of groundglass, can be washed off when dirty, and when no longer wanted can be easily removed with any good paint remover.—A. S. D., Florida.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

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Let Us Make Some War Pictures

The subject of war dominates the news, war stories fill our popular magazines, war pictures flash before us on the screen, war occupies a considerable portion of our thoughts, and war is the subject of no small part of our conversation. But are we to go on with our photographic activities devoted to the same pastoral landscapes, the same striving after the artistic with a few kitchen utensils before the camera, the same effort to meet the requirements of a certain jury of selection, or the same industrious firing off of film on any and everything that goes to the making up of the average amateur's collection? This war, while some distance away, affords, right here at home, much that is of more than passing interest in the way of pictures. And where the average photographer overlooks his opportunities is in thinking that the only worth while pictures are to be made at the centers of activities, the large cities, the training camps, the points of embarkation, and the like, pictures such as prove most interesting to him as they appear in the illustrated press and on the screen. He never stops to think that the little minor notes with which he is more familiar, may have their value, a value even greater than that of the more impressive passages represented by such scenes as marching troops in city streets and subjects of that nature.

Let us take a suggestion from those who select the cover illustrations for our better class of publications, all shrewd men, when it comes to gauging the likes and dislikes of our people as a whole. These men are giving us many just such pictures, as both the most isolated amateur and the member of the metropolitan camera club can make within stone's throw of their own doors, if not actually within their own homes. And if these pictures have a value in the eyes of the general public, how much greater must be their value to the subjects themselves, their immediate family and their friends. And besides, read our quotation from Major Banning's letter on another page, and ask yourself if, in turning your attention to this new field, you cannot perhaps do your bit to add to the permanent historical record of the War Department. Your town, no matter how small it may be, affords opportunities that are yours, and yours only. War activities are all about us, conditions are changing by reason thereof, new scenes and new situations confront us from day to day. New pictures suggest themselves constantly to the observing eye and active mind. All these the camera can record; and recording, do a service far in excess of that suggested by the ease with which it is achieved.

Years ago, there came before us a little 4x5 print, showing perhaps a dozen or less figures standing about an open grave in a typical country burying ground. Snow was on the ground, the few small trees were bare, the figures were those of men well beyond their prime, their dress and bearing showing

them plainly to be war veterans, Grand Army men. As a picture having human interest, it could hardly be excelled. Of course, it did not have the charm of a more cheerful subject, but everything about it was intensely human, deeply sincere, and thought-compelling. The scene was one that perhaps not even the photographer himself, one of the mourners, appreciated as material for a real picture. The camera had evidently been taken along, and the exposure made in order that its owner might present each of his companions with a memento of the sad occasion. Before I could get in touch with the photographer, he had himself passed away, and the negative was never located.

At the time of the Spanish-American war, one of our readers took a picture of the handful of volunteers from his little town, as they marched away along the dusty village street to take the train to camp. The sun was low, well in front of the lens and almost directly behind the marching men. This and the dust made all the faces indistinct, but the picture was there, a picture that told a story of the war activities as did none of those showing marching columns in the streets of some large city. Another case of a real picture, a picture that only the home photographer is on the ground to secure, a picture such as he too often overlooks.

And then there are the little homely scenes of love, devotion and patriotism. The mother knitting for her boy, and the pride and gladness of the first letter from "Over There", the eager scanning of the local paper for news from the front; these and a thousand other subjects call upon us for the recognition that they deserve. Pictured, such scenes should have a much stronger appeal than the hardly more available landscape or whatever it is that the individual photographer seeks to utilize as the vehicle for his pictorial expression. And such pictures can have all the charm and interest that goes with truth and actuality, something not always easy to secure with make-believe subjects posed for the occasion.

The opportunity to photograph human interest actualities, the actual scenes, is one that we should not overlook, particularly when taking advantage thereof permits us to render a service to those not interested in our success from a pictorial point of view. The landscape and other subjects will all be at hand when those we have in mind are no longer available, and therefore, neglecting them in favor of subjects of a more vital and intimate nature, at least for a time, would seem the proper course. Let us get the war flavor into our work, as the artists in other mediums are doing, as our writers are doing, as the conditions that influence our lives from day to day are doing all too thoroughly.

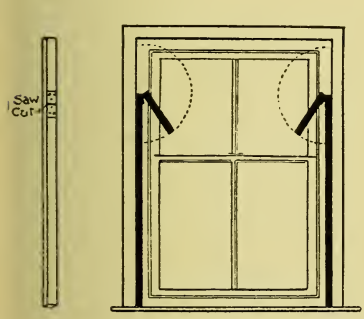
In all objects in nature there is something predominant, and which alone has struck the observation of every one. If the artist gives that, he brings his object at once home "to men's bosoms", and without which his greatest labor is but industrious trifling. The character of an object depends upon a particular color, a particular touch, a particular concentration or diffusion of light, according to its form or substance; to obtain which ought to be the constant study of the student, as it is the language of this art, and the only language universally understood.—JOHN BURNET.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D., Burlingame, California

Blocking Up a Window

Material required for the fitting described here is easily obtainable at very little cost. It consists of four pieces of one inch square deal, two of them being one inch shorter than the height of the window between the sill and the top lining, one the exact width between the linings at the top, and one two inches shorter than the width between the linings at the bottom. There will also be required one pair of back flap hinges, a dozen screws of suitable length, one piece of linoleum and a few tacks.

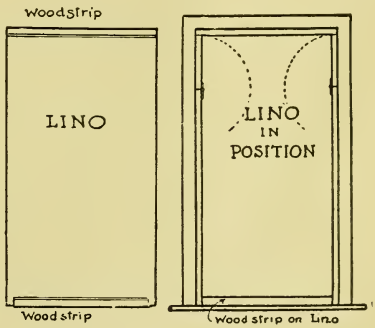


To construct the fitting, the two longest strips have screwed on to them, about nine inches from one end, the two hinges; and when this has been done the strips are cut through at the hinge with a fine tenon saw, as shown in first sketch, taking care not to blunt the teeth of the saw on the metal of the hinge. This plan is much to be preferred to that of cutting the wood first and putting on the hinges afterwards: as it prevents the wood from splitting, and ensures the joint being exactly right.

The two pieces so prepared can then be screwed to the window linings, as shown in the next sketch, allowing a little more than the thickness of the linoleum between them and the window frame. This constitutes the whole of the fitting as far as the landlord's property is concerned.

The other two strips of wood are tacked one at each end of a strip of linoleum of the size required, taking care that the bottom piece is exactly centered and the fitting is complete. The material used for the purpose need not necessarily be linoleum, although this is likely to be the most suitable fabric that is readily obtainable. Whatever is used must have sufficient stiffness to keep in place, and, of course, must be quite opaque.

To block up the window all one has to do



is to catch hold of the bottom strip of wood, and, with the hinged flaps open at the top, to slide the linoleum down behind the strips like a blind, and then to push up the hinged pieces again, which will hold it securely in position. It does not take half a minute to block up a window in this way, or to open it. If a red light is required it can be provided by cutting a suitable opening in the linoleum with a sharp knife and gluing over it a couple of thicknesses of ruby fabric.—*Photography.*

Positives On Glass

Everyone is familiar with the "tin-type" photograph which the man on the sands will turn out complete in a very few min-

utes; but the details of its production must be mysterious enough to most amateur photographers, who do not find anything in their own procedure at all parallel to what he appears to do. They may have thought it would be interesting and amusing to be able to make such tin-types or their equivalent; but if they have carried their investigations any further they will have discovered that he uses the wet-plate process, which is proverbially difficult and tricky, requires special apparatus in the way of a silver bath, dark slide, etc. and special solutions, and is accompanied by a staining of the hands which has no parallel in dry plate work.

The tin-type, it may surprise some who have not looked into the subject, is not in the strict sense a positive at all, but a negative. If we could remove the film bearing the image from its metal support and transfer it to glass, we should find on holding it up to the light that, just as in the negatives with which we are familiar, the high lights of the original are represented by dark patches, and vice versa. If we put a piece of sensitive paper under it, we could make a positive print, of a sort, from it. How, then, is it, some reader will feel tempted to ask, that it appears as a positive on the metal? It is a question worth looking into, as it may show that if we care to do so we can get a very similar result, using only materials with which we are already familiar.

If we examine the tin-type closely we shall see that although, if the metal were transparent, it would appear as a negative on looking through it: the parts which represented the high lights, and therefore looked black when it was viewed in this way, are white, or at any rate a light cream color, when seen by reflected light. Any opaque substance, however white its surface, looks black when applied to glass and viewed by being held up to the light, as can be seen by putting a patch of whitening on a piece of glass. The image on the ferrotype is not only of a white color; it is also very clear and thin. It was on this account that when we wrote above that a print could be made from it, we added the words "of a sort". It would hardly have enough contrast to give a bright print, even on the most contrasty paper, and the result would look dull and heavy, especially in the shadows. In fact, the image has been kept thin and clear in order that the black japan on the metal support should show through. The consequence is that the high lights by transmitted light would look opaque and black, while the shadows would look transparent and light; but by reflected light, when the film is on a black support, the high lights being white show as lights, while the shadows being transparent look dark by reason of the black support being visible through them. Thus we have in such photographs an image which is positive when looked at by reflected light, but negative when regarded by transmitted light.

If a similar result is to be got upon a dry plate, we must adopt some procedure which will give as white an image as possible. The writer was led to experiment in this direction by an accident. Having a couple of plates to develop, he realized after the solution had been poured over them that what he had used as water to dilute his developer was actually a solution of potassium bromide, and that in consequence his developer contained quite ten grains of bromide to the ounce. It was too late to remedy matters, so development was continued with this highly restrained developer. The resulting negatives, which took a very long while to finish, were not very satisfactory, being hard and clear instead of full of good gradation. But one remarkable thing about them was that the image seen by reflected light was very white, so that they had quite a positive appearance, especially when viewed from the glass side. All that was necessary was to back them up with something black. When opportunity arose, a number of trials were made with different kinds of plants and different developers, which showed that almost any developer and plate, provided it had a full exposure and a very much restrained developer, and provided at the same time it was quite free from fog, would give a white enough image to be used in this way. It was found that even ordinary developers, without the addition of any restrainer, could be made to give very fair results, so long as the image was kept thin. It was surprising to see how an image which would be described in the ordinary way as black, actually had quite a light tint when it was seen against the black velvet. The metol and amidol types of developers, however, did not answer for this purpose: pyro and hydroquinone being those most satisfactory.

A good working process is to select some plate of ordinary, not extra rapid, sensitiveness, such as the "Imperial Ordinary", to name one which has answered very well. There seems to be nothing to choose between different makers; but the ordinary gives a little brighter result than plates of a more rapid kind. The exposure having been found by means of the meter, at least four times what the meter indicates should be given, as full but not over-exposure is important.

The developer that is most suitable is one of pyro-soda, which may be made up from the usual stock solutions, so as to contain in each ounce one grain of pyro, thirty grains of sodium carbonate, and thirty grains of sodium sulphite. This is then diluted with an equal bulk of a five per cent solution of potassium bromide.

The full success of the result will depend very largely upon the extent to which the development is carried; but as the action is a very slow one, there is plenty of time to form a deliberate judgment. The dish should be kept covered during the whole time, except just at the moment when the plate has to be looked at, as complete freedom from fog is very important. One has to put away all idea of correct development in the usual negative-making sense. We are no longer concerned with density, but merely with color of the deposit and the extent to which the details in the shadows have been made visible; and as soon as all the details in those parts are out at all, we must stop the action of the developer, as any graying over, which in a negative would only mean a little slower printing, would in this case give a dull foggy effect. A few trials are necessary before the degree of development that gives the best positive has been determined; but it is not a difficult matter to learn just how far to go, and even if one's first attempts do not show the full capabilities of the plate to give a direct positive, at any rate they are almost sure to be good enough to be very encouraging.

As soon as development is complete the plate is fixed. For this purpose an acid hypo bath should always be used, as by stopping all further action of the developer at once it prevents any chance of development being carried further than was intended. The bath used by the writer consists of a solution of hypo of a strength of two ounces to the pint. This is made by adding to an ounce of the ordinary four-ounce-to-the-pint stock fixing solution one dram of the following acid bath and seven drams of water.

Sodium sulphite, crystals, 4 ounces
Citric acid ..... ½ ounce
Water to .....1 pint

After the usual fixing in this, the plate is well washed and allowed to dry.

If all has gone well it will present the appearance of a positive on whichever side of it we look, but the more perfect positive effect will be got by viewing it from the back or glass side. This is advantageous, as it allows the black substance to be used as the background to the image to be put against the film, and the picture to be viewed from the glass side, which shows the image the right way round. If we had to view it from the film side, the side, that is to say, which in the camera is turned towards the lens, it would appear reversed right for left, as in the case of a tin-type. A piece of black velvet, or of card painted with dead black varnish, pressed gently against the film, makes a suitable backing; and thin metal frames to put round the plate and hold a card behind the velvet are obtainable for small sizes; for large ones a little wooden frame is very suitable.

If a warm-tone lantern plate is used, and is developed with a solution containing both bromide and ammonium carbonate, as recommended for red tones, the image will be still whiter and also more delicate than anything that can be got upon an ordinary plate. Very good results have followed from the use of a developer made up from four stock solutions, consisting of ten per cent pyro, liquor ammonia, ammonium bromide, and ammonium carbonate. For each ounce of developer fifteen minims each of the pyro and ammonia and sixty minims each of the bromide and the carbonate are taken and diluted to make one ounce. Development is slow, and in consequence of the extreme whiteness of the deposit needs careful watching, as the progress of the image is not seen very easily. The drawback to the use of lantern plates is that the exposures needed are very long, even in the most favorable circumstances.

As any clouding over of the deepest shadows very much interferes with the brilliancy of the positive picture, it is sometimes an

improvement to give the finished plate a brief reduction with ferricyanide and hypo. This should be done when the washing has been about half finished, but is best not before.

A crystal of the ferricyanide about the size of a split pea is crushed and dissolved in an ounce of water. In case there are any undissolved particles, which would give rise to black spots on the positive, it should be left for a minute or two, and then most of the clear yellow solution poured off into another vessel, diluted with an equal bulk of hypo solution of usual strength, and poured over the plate. A tap with running water must be close at hand, as the action is almost instantaneous, and if allowed to go any too far the results would be ruin to the picture. If the strength of the reducer seems to be so great as to be almost uncontrollable, a little water may be added: but the more rapid the action the better does it accomplish what we want. The solution should be poured on, the dish rocked for about four or five seconds, and then the reducer at once poured back into the glass and the plate thoroughly washed under a good stream. If after washing for a minute the reduction does not seem to have gone quite far enough, the operation can be repeated.

Reduction is not the only process applicable. The plates may be intensified, for which purpose the Wellington silver intensifier is quite suitable. It does not seem to interfere in any way with the whiteness of the image, provided the intensification is not carried too far: but, as a matter of fact, there is little or no risk of this, as it is most unlikely that the original development will not have given all the vigor that the process requires.

There is one other modification of such a method which may be mentioned. Suppose we get a perfectly black image, such as is usually got in negative making; it is possible to convert this into a white one. I have not tried bleaching and then redeveloping with a white-image developer, such as described above: but I have bleached a plate in a solution composed of twenty grains of copper sulphate and twenty grains of common salt to the ounce of water. In this the image speedily becomes quite white, and only needs a thorough wash to finish it.

As an entertaining variation from the ordinary routine of the amateur photographer, these dry-plate positives are well worth the making. When portraits are to be made for bazaars and similar purposes they can be supplied very quickly, drying them by means of methylated spirit: but the gelatine film necessarily takes much longer to dry than collodion, so that they cannot be turned out as quickly as the work of the man on the beach. There can be no question as to their permanence, since there is no reason to suppose that they are any less permanent than negatives made in the ordinary way on plates of the same character.—Leonard Rickards in *Photography*.

Photographing Forgings

Photographers are often advised to specialize, or confine their energies to one or two particular branches of the craft. The photographing of forgings or castings, though somewhat out of the usual line, may be taken as an illustration of special work.

The apparatus first needs consideration. No matter what size of camera, whether 4¾x6½, 8x10, or the more usual 10x12, it must be of a very strong and rigid build, for it will probably come in for rough wear. It should have all available movements so that jobs may be tackled in tight corners. Not only must it have a good length of bellows for long-focus lenses, but the screen must be able to be brought quite close up to the lens for very wide-angle work. Obviously large castings cannot be moved about as easily as small ones. The photographer must therefore tackle the subject or leave it unphotographed.

The tripod must be strong and rigid, so as to avoid undue shaking from moving machinery. It should be of the three-fold pattern, so that the camera can be brought quite near to or raised to its greatest distance from the ground. Such apparatus as described will fulfil all requirements of the work under consideration.

The lens must be chosen carefully, for success in this class of work depends very largely on choosing the right kind of lens. Personally I use an anastigmat of seven and one-quarter inches focus working at f-5.8, on a 4¾x6½ plate, and rarely do I find it necessary to stop down below f-8 or f-11. Such a lens, by allowing the exposure to be cut down, saves much time, a point worth

considering where perhaps half-a-dozen men are waiting to go on with their work. The advantage of a quick lens is also apparent when working in a poor light, such as one finds in a smithy or foundry, or in winter, when exposures would otherwise be long.

For larger focus the front or back combination of the anastigmat may be used alone. These will give foci of eleven and thirteen and one-half inches respectively; of course, they can only be used with a long-extension camera and where the size of the shop allows of the camera being placed at a great distance from the subject. For short-focus or wide-angle work I use a casket of lenses giving 4 inches as the shortest available focus on a half-plate at wide-angle. I have, therefore, a wide range to choose from, and am able to make the most of my subject.

Orthochrome plates are what I generally use. These give a long scale of gradation, and if properly exposed and developed the resulting negative is full of detail, a point which is so necessary in this class of work. These plates will help to reduce harsh contrasts if used in conjunction with a six-times screen, the latter cutting off a large proportion of the blue light coming from bright turned work or from the skin found on forgings.

If the subject be bright machined it is better to rub over the bright parts with putty, though this should only be applied where necessary to subdue the light reflected from these parts. Should the subject be in the rough, and of a red color, due to annealing, then give it a wash of distemper of a neutral gray color, so as to make it present a better appearance to the camera. Dark shadows may be lightened by reflecting light on them from a few sheets of tin or white card. Even a newspaper out of view of the lens will improve these dark places. It is often an advantage to give some idea of the size of forgings or castings. This may be done by placing a workman standing in some inconspicuous place where his height will tend to give an idea of the relative size of the subject to be photographed. A similar result may be obtained by placing an ordinary two-foot rule near the forging or casting and including it in the photograph. Backgrounds, if used, should be of a neutral gray color, large enough to shield any undesirable object which is not required in the view. Canvas stretched on a framework will be found most serviceable.

Unfortunately the photographer cannot choose the day or the light when the work must be done. If he could he would select a well-diffused light for the work. Bright sunshine should be avoided whenever possible, especially when photographing bright work, as this increases contrasts and casts objectionable shadows. Exposure will, of course, vary with the time of day, month of the year, and with the light available in the shop.

My exposures are calculated by means of a Watkins meter, allowing slightly for the nearness of the subject to the camera. I find that after testing the light, and calculating as for an ordinary subject, I must allow half as much again for the subject being so near. As a rule, work in a dark shop will come under the same heading as interiors, always allowing, as mentioned above, for the shorter distance between camera and subject.

The casting in the illustrations was photographed in September with noonday sun. The light came in mostly at the doorway where the camera stood, though a little light came through windows not seen in the print. The exposure was ten minutes at f5.8. The plate was exposed without a screen. Do not forget to make the extra allowance for the screen when using it, or failure is bound to follow.

It is always advisable, until considerable proficiency is attained, to expose two plates, and especially is this the case where the negative has to be worked up or an enlargement is contemplated.

Development should be carried out so as as to avoid harsh contrasts. Personally I use pyro-soda with bromide, made up so as to give a good negative completely developed in six times the first appearance of the image as recommended by Watkins.

Many subjects look better blocked out. This is by no means an easy matter, especially where there are intricate lines. A few hints may be of use to the novice. A good black, such as Winsor and Newton's process black must be used. Given one of these, a few sable (not camel-hair) brushes, numbers 0 and 1 for choice, a bevel-edge ruler, and a drawing pen, we have all that is necessary, though a retouching desk is an advantage. A

good substitute for the desk is the camera back with the focusing screen removed, and the negative film put up in its place. First rule with the drawing pen and ruler all straight lines in one direction. When these are dry, rule those in another direction, and so on until all the straight outlines are ruled in. Only very light contact with the film is necessary to make the medium flow. The remaining outlines are done in free-hand with the sable pencil. The outlines of curved surfaces will be much steadier by trailing the brush round, as it were, instead of using the extreme point. The remaining background is then washed in with the medium.

The printing process will naturally depend on the purpose for which the prints are required. Glossy printing-out-paper, bromide or gaslight papers show up the detail and are useful when half-tone blocks are required to be made for reproduction purposes or for catalogue work. Platino matt or semi-matt bromide and gaslight papers, though not showing so much detail, nevertheless look well and more workmanlike than the glossy variety.—R. H. Holding in *Amateur Photographer.*

An Exposure System For Use With Slow Lantern Plates

Using two or three lantern plates to ascertain the correct exposure before making a perfect slide is not at all necessary. Even a single trial plate bestowed on such a purpose is wasteful, if we adopt an exposure system on the lines described below. The method has the double advantage of cheapness and simplicity, is perfectly reliable, and when once the standard slide has been made, requires no further use of lantern plates in making trial exposures.

If we have among our collection of slides one specimen which we consider practically perfect, and of which we have full particulars of exposure and light used, as well as of the distance from the light when making the exposure, well and good; the work is plain sailing. If we have no such slide, then we must perforce make one.

We therefore choose a likely negative, i. e., one which we are sure will present no great difficulty, and proceed to make a test slide from it, preferably by making a series of exposures on the plate, screening part of it, and so finding out exactly what exposure it needs. Having arrived at a satisfactory result, the typical or standard slide may be made. This must be tested in the lantern, as it is of the utmost importance to get it just right. Full details of exposure, the nature of the light, and the distance from it must be noted. If the slide is found to be quite satisfactory we may congratulate ourselves that no further tests with plates will be needed in any future slide making.

The next operation is to take the negative from which the slide was made and make from it a print on bromide paper. This need only be fixed, washing is not necessary. We carefully note the length of exposure, and the distance from the light in this case also.

Let us suppose that the print and slide records then read something like this:

Slide: Exposure of two minutes at fifteen inches from oil lamp.

Print: Six seconds at eighteen inches from oil lamp.

It is obvious that if we make a print from another negative that happens to require exactly the same exposure as this negative did, then, in slide-making from that negative, we must also give the same exposure as we have recorded for the standard slide. If the bromide print takes half or double the exposure, then the lantern plate must be given an exposure in the same proportion. The plate-makers give a scale of times for various colors, so that the tone or color of the slide need not receive our consideration.

There are certain rules to which we must adhere, and they are obvious: (1) The prints must always be made with a light of the same kind; if we start with oil, for instance, then oil must be used thereafter; (2) It is better to expose at a uniform distance, as calculations are difficult, seeing that the source of light is not a point; (3) When getting a fresh supply of bromide paper, a piece of the new kind should be tested with a piece of the old (on the same negative, of course), and the difference, if any, noted; (4) The plates should be exposed at a fixed distance; (5) The same light should always be used for plates, though this need not be of the same kind as that used for the paper; (6) For different brands of plates fresh tests must be made.

We may use daylight and gaslight paper for the print if we prefer it, but in that case we must test the light by meter.—Sydney H. Carr in *Photography.*

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

A Make-Shift Tripod

A recent visitor, in the course of an extended talk, explained that he no longer bothered to take along a tripod when going for a ride in the country, even if he felt quite sure he would want to take a few time exposures, such as shaded places demand. On one trip he forgot and left his tripod head at home. He picked up an empty tin can not a great distance away and found that by punching a hole therein he could screw the camera to the bottom of it, when inverted, and by inserting the upper end of the tripod legs a good tripod head was improvised. A trip or two later he discovered that it was not even necessary to carry the tripod legs, there always being a few bushes or small trees about that would furnish the necessary "legs" if properly approached with a strong pocket knife. Three rough sticks with a handkerchief tied around them a few inches from their top ends and this tie inserted in an empty tin can, made an excellent tripod, the camera requiring no screw on so solid a base. He went on to say that most pictures were taken with entirely too tall a tripod, his own practice being to use sticks only long enough to allow him to work from a seated position, argueing that painters always worked in that way and photographers only used a tall tripod in order to permit them to stand, despite the obvious fact that the photographer almost invariably got a foreground that would have been better foreshortened by a much lower viewpoint.

Soldering Glass

A New York correspondent wants to make some transparencies that he can hang out in the weather without danger of the binding that holds them to their cover glasses being destroyed by the weather. He has read of a method of soldering glass together and imagines that this would be just the thing for joining and finishing the edges. We have our doubts as to the practicability of the idea, as the high heat required would not be very beneficial to the gelatine coating of the transparency emulsion, unless well hardened by formaline, but our correspondent can try it if he wishes. The formula calls for an alloy made up of ninety-five parts of tin and five parts of zinc, this having a melting point of four hundred and twenty-five degrees Fahrenheit. The glass must first be heated, very carefully, of course, to this temperature and then the alloy applied by means of a soldering iron. That is the instructions for soldering together glass and all we can do is to wish our correspondent success. We should think a good waterproof cement, or metal binding strips put on with such cement, would answer the purpose as well and be much easier to apply.

Cleaning Up Prints

Nearly all spots, stains, surface fog and friction marks seem to be amenable to the potassium-iodine treatment. Make a one-in-ten solution of cyanide of potassium, one ounce of cyanide in ten of water, and call it No. 1. Get a bottle of iodine, not iodide, of standard strength and call it No. 2. To use, take a dram of each in two and a half or three ounces of water and apply with a tuft of cotton, rubbing the spot or stain gently. Do this with the wet print on a sheet of glass or the bottom of a rubber tray, with the running tap handy to rinse occasionally as the work proceeds, so that the action, which is really that of a reducer, can be kept under control. Occasional rinsing will also prevent the solution staining the paper, as it will sometimes do if allowed to remain too long on the print. One must remember that the cyanide is a strong, corrosive poison and use it with care, although the mixed solution is so weak in the cyanide that no fear need be entertained unless one's hands harbor cuts or sores. A quick application, that is, going rapidly over the whole surface of the print, will clear up slight fog or veiling, and we have seen quite pleasing suggestions of clouds introduced

into dead looking skies by skilful use of this same solution. After clearing or reducing with this solution, rinse the print, return to the fixing bath for a short immersion and then well wash as usual.

Using a Spectacle Lens

An Illinois subscriber wants to use a periscopic spectacle lens for landscape work, or rather, asks us if it can be used, and how. It certainly can be used and will, no doubt, give him some very good results. It should be fitted in a simple tube with the concave side towards the plate and the stop a little distance in front, say half an inch. A perfectly satisfactory tube for experimental work can be made by winding the lens and a piece of metal or card cut for a stop, with strips of pasted black paper, forming a flare at the back end, so that it can be attached to a lens board with a few screws. A sharp knife and sand-paper will finish off the front, and a cap is easily made in the same way as the tube.

Motion Picture Exposures

An Oregon reader inquires as to how he can determine the relative exposures for the various large apertures at which the lenses on motion picture camera work.

The following table, copied from the No. 7 Circular of the Harvey Exposure Meter, will be of value:

f-2	stop is 15	times	faster than f-8.
f-2.4	stop is 10	times	faster than f-8.
f-3.2	stop is 6	times	faster than f-8.
f-3.5	stop is 5	times	faster than f-8.
f3.8	stop is 4½	times	faster than f-8.

If the stop in question is not shown on the table above, one can figure out the relative exposure for himself by squaring both stop numbers and finding their relative values. Thus: the square of eight is sixty-four and the square of four is sixteen, therefore the exposure for f-4 is to the exposure for f-8 as sixteen is to sixty-four or four times faster.

Hardened Paint Brushes

The most of the inquiries of late seem to be running to rather non-photographic topics. An Oregon correspondent wants to know how to soften paint brushes that have become hard. "Henley's Twentieth Century" says: Paint brushes which have dried up as hard as stone can be cleaned in the following manner. Dissolve one part of soda in three parts water; pour the solution in a cylinder glass, and suspend in it the brushes to be cleaned, so that they are about two inches from the bottom of the vessel. Let it remain undisturbed at a temperature of one hundred and forty to one hundred and fifty-eight degrees Fahrenheit, twelve to twenty-four hours, after which the most indurated brushes will have become soft, so that they can be readily cleaned with soap. It is essential, however, to observe the temperature, as bristle brushes will be injured and spoiled if the heat is greater.

Water Colors On Printing-Out Papers

An Ohio subscriber wants a good medium for use in tinting or coloring photographs on printing-out paper. The following is recommended by an authority on the subject:

White of egg	1 ounce
Carbonate of ammonia	20 grains
Glycerine	15 minims
Ammonia, strong	15 minims
Water	2 drams

Beat the white of egg to a froth and allow to subside and then add the other ingredients in the order named.

Cleaning Oil Paintings

An Illinois subscriber has been given a number of old oil paintings to copy, and these he finds are well coated with dirt or grime; as he explains it, with something akin to a greasy mixture of soot and dust. He remembers having read of a valuable painting having been ruined by the efforts of a restorer to clean it, and therefore wishes something recommended that will not in the least endanger the paintings on which he proposes to work. Asking an artist friend as to the best method of proceedure, he advises that in cleaning a painting, owing to the uncertainty of the material used in the colors, nothing should be used except the tips of the fingers dipped in linseed oil or water. Of course the dust can first be wiped off with a soft cloth, but no chemical solution should be permitted. The greasy nature of the deposit our Illinois correspondent mentions is not at all uncommon as a result of air more or less laden with smoke, and this, as well as the fly specks which are always in evidence, will respond to a little patience and the use of the oil and clear water as advised.

INTERNATIONAL PHOTOGRAPHIC ASSOCIATION

The Lantern Slide Division

"My Dear Mr. Clute:

"Some time ago I saw in a photographic magazine the suggestion of Mr. Arthur H. Farrow, who has since become lantern slide secretary of the I. P. A., that there be started a lantern slide exchange. I was interested in the fact that Mr. Farrow was a fellow-citizen of mine, and I felt anxious to cast in my lot with some other 'bugs' who would stimulate me to do my best work. So I connected with the exchange.

"This morning I had the pleasure of exhibiting the fifty slides making up one of the circulating sets, to some seven hundred students and faculty in the state normal school where I am instructor and 'official' photographer. The slides were very interesting, and most of them were capital pieces of lantern slide making. There being no connected story running through the collection, I had doubted whether the exhibit would be acceptable to my fellow teachers. The expressions of satisfaction put all doubts aside. I am invited to show subsequent sets as they are sent out.

"Mr. Farrow deserves a great deal of credit for the admirable way in which he has prepared and edited the set. It has involved no inconsiderable expenditure of time and money. As to the latter, I believe some arrangement should be made to divide the expense among the participators; and I for one should be glad to contribute my share.

"Cordially yours,

(Signed) "Herman G. Cuthbert.

"Newark, N. J., March 5, 1918."

Officers of the I. P. A.

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Arthur H. Farrow, Secretary Lantern Slide Division, 51 Richelieu Terrace, Newark, N. J.

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Mississippi—George W. Askew, Jr., 211 34th Ave., Meridian.

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New York—Louis R. Murray, 21 Clark St., Ogdensburg.

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NEW MEMBERS

4474—J. G. Boyce, 1501 County Ave., Texarkana, Ark.
Class 2.

4475—Branson M. De Cou, 167 North Grove St., East Orange, N. J.
4x5 and 5x7, also stereographs, various papers, of 2000 negatives of National Parks, Pacific Coast, scenery, etc.; for unusual pictures of the same, fine photographs of any description, and figure studies. Desire to exchange only specialty lantern slides.
Class 1.

4476—J. A. Echols, Zenith, W. Va.
5x7 and 8x10, developing papers, of mountains, hills, mountain lake, Ball Knob and valleys; for anything of general interest. Wishes to correspond with members with view of helping and being helped photographically. Class 1.

4477—Louis A. Schmalholz, No. 2 River Road, New Brunswick, N. J. Class 2.

4478—E. Miculka, Box 282, Floresville, Texas.
Class 3.

4479—C. H. Crothers, Jr., R. F. D. No. 1, Alden, Mich.
2¼x3¼, postcards and 5x7, various papers, of miscellaneous portraits, landscapes, water views, general snapshots and time exposures; for the same. Class 1.

4480—Louis J. Gersar, Editor "Opera News", care of John Wanamaker, Broadway and Ninth Sts., New York City.
Lantern slides of South American negatives and exceptional prints of Western scenery, figure studies, draped and undraped; for the same. Class 1.

4481—J. E. Coffey, Mountain Park, Okla.
2½x4¼, developing papers, of mountain scenes, scenes of passing events, buildings, etc.; for the same, also any photographs of general interest. Class 1.

4482—S. R. Vandewater, 5584 Etzel Ave., St. Louis, Mo. Class 2.

4483—Auron E. Broyles, 408 W. Harrison St., Butler, Mo.
2½x4¼, developing papers, of just common photographs, some scenes of the town, and girls; for figure studies, scenes of interest, such as California and Colorado scenes, also historic pictures; in fact anything of general interest. Class 1.

4484—N. McD. Freeman, 7720 Emerald Ave., Chicago, Ill.
2½x2½, 3¼x4¼, 4x5 and 5x7, developing papers, of general views, trees and water and tree studies; for anything of general interest, no portraits. Must have subject data, that is, location, description, etc. Desire only unmounted, retrimmed prints, narrow white margins. Class 1.

4485—H. F. Bailey, Spencer, Tenn.
Class 2.

4486—Ev Tejeda. Apartado 500, Tampico, Tamps., Mexico.
Class 2.

RENEWALS

1895X—Arthur L. Burgess, 227 No. 29th St., Columbus, Ohio.
Post cards and prints up to 4x8, of miscellaneous subjects, ray filter work and cloud views, etc.; for the same. Class 1.

2894—John F. Fensel, R. F. D. No. 9, Montpelier, Ind.
Postcards, of landscapes, storm wrecks, wild animals, etc.; for anything of general interest. Class 1.

3329—George R. Bunn, 1571 W. First St., Los Angeles, Cal.
3¼x5½, developing papers, of mountain and ocean scenery, National Parks, over 3000 negatives of best California scenery; for artistic scenery and figure studies only. No post cards unless enclosed in envelopes.
Class 1.

4090—John W. Cook, Kingsburg, Cal.
Stereoscopic views of miscellaneous subjects; for the same. Class 1.

4136—C. E. Fey, P. O. Box 25, Laramie, Wyo.
Class 2.

4363—Jonathan T. Welsh, 50 Fort Greene Place, Brooklyn, N. Y.
Class 2.

4459—Louis Rommel, 1516 E. Franklin Ave., Minneapolis, Minn.
3¼x4¼, 3½x5, and a few 5x7, developing papers, of landscapes, snow scenes, waterfalls and historical buildings; for the same.
Class 1.

CHANGES OF ADDRESS

4104X—George Plass, 1321 Church St., Vincennes, Ind.
(Was Route 7.)

4162—Samuel T. Dent, 2728 N. 5th St., Philadelphia, Pa.
(Was 2744 N. Ringgold St.)

4383—John W. O'Neill, 3123 13th Avenue, Oakland, Cal.
(Was Nevada City, Cal.)

4406—B. C. Betancourt, 499 Lexington Ave., Brooklyn, N. Y.
(Was 594 Kosciusko St.)

WITHDRAWAL

4321—L. A. Smith, Tooele City, Utah.
For the time of the war.

CLUB NEWS AND NOTES

California Camera Club

At the regular monthly meeting in April there was enacted in the club rooms a very pretty ceremony, the dedication of the Club Service Flag containing twenty-five stars, representing those of our boys who have left us to do their bit "Over There". At the conclusion of the meeting one of the club members again exhibited a collection of colored slides, the views being of the Roman Forum; the work of club members.

The outing for April was again held in Marin County, the location being Phoenix Lake and vicinity. Many cameras were in evidence, and many pretty bits of landscape were secured. Plans are under way for the holding of the annual outing to the Yosemite Valley, the time decided upon being the month of June.

The demonstration committee announce, for April, a talk by Fred L. Packer, on "Line Harmonics as Applied to Decoration". This will be illustrated by original paintings and chalk talks. Charles L. Snyder exhibits, on the walls of the club this month, a very interesting collection of prints consisting of

landscapes and of portraits taken by electric light.

Boston Y. M C. A. Camera Club

The last annual exhibition held by the Boston Y. M. C. A. Camera Club, March fifth to eighth, inclusive, enjoyed the largest attendance of any yet held. Landscape and marine subjects dominated the one hundred and eleven prints making up the exhibition, and the character of the showing was such as to call forth expressions of marked appreciation in the art columns of the Boston papers.

Chicago Camera Club

The Fifteenth Annual Exhibition of the Chicago Camera Club will be hung by the Art Institute of Chicago, in one of its galleries, May ninth to June seventh, inclusive. This is the first time that the Art Institute has so honored and recognized the Chicago Camera Club, and of course the membership is justly proud of the fact. Any of our readers who may be in that part of the country should not neglect the opportunity of visiting the exhibtion, as it will be well worth their while.

OUR BOOK SHELVES

"Concrete Pottery and Garden Furniture"

This is a book of absorbing interest to the man or woman who likes to "build things", likes to "tinker", and it should be of particular interest to those belonging to that class who are also interested in photography, as so many of them are. It goes very thoroughly into all the details of making wire forms, making plaster moulds, combining casting and modeling, coloring the cement and producing designs in colors, using wooden moulds and modeling by hand, and even the more craftsmanlike use of glue moulds is entered into. When one is told that the illustrations number one hundred and forty, some idea of the completeness of the instructions given is conveyed. And as not a few of these illustrations cover the work and the productions of the author, Ralph C. Davidson, we have still further evidence of his thorough knowledge of his subject, if a reading of the text is not sufficiently conclusive. And the beauty of the whole thing is that making most artistic garden pottery, pedestals, benches and the like is well within the capabilities of the ordinary individual at the cost of a sack of cement and a cubic yard or two of sand, with perhaps a few cents extra for wire netting, coloring matter and such odds and ends as ambitious efforts may demand. Not only will the results add greatly to the effect of one's out-door portraiture about his home, but they will add permanently to the beauty of the home garden or grounds, be they ever so simple. Published by Munn & Company, Incorporated, 361 Broadway, New York. Price one dollar and fifty cents, postpaid.

A Shutter Repair Guide

Under the title of "Illustrated Guide and Descriptions of Photographic Inter-Lens Shutters, with Directions for Cleaning and Repairing", there comes to our desk a particularly well gotten up book that lives up to its title. Following the general instructions for overhauling inter-lens shutters, detailed descriptions are given of seventeen different shutters, those most in use, together with photographic illustrations, greatly enlarged, of their interior arrangements, the parts referred to in the text being plainly numbered. A front view of each is also shown, together with any special part not shown in the other two illustrations of each series. The book is one that must have involved a large amount of work and expense and it is a book that should be of the greatest value to those having occasion to overhaul or repair shutters, and, while intended primarily for photographic dealers and others called upon to remedy shutter trouble, it should even enable the owners of these shutters to release himself from difficulty along this line, when it is not convenient to consult an expert concerning what may be only a little dust or a loosened screw. The book is published by William O. Hammer, 1085 Fourteenth Street, San Francisco, California; price two dollars and fifty cents postpaid.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

C. R. Miller, Klamath Falls, was in San Francisco early in April.

Miss Edith Hayden has returned to Roseburg, Oregon, after spending two months on her ranch at Yuma, Arizona.

Don't forget that Harry Lee Richardson, the jovial Premo salesman, now has Graflex and Century goods to sell you.

N. C. Beeman, the Eastman Kodak Company's salesman in the Utah district, like Duke Buttrick, carries a cushion in his grip. His is green, however, while the Duke is partial to purple.

H. Sackrider of Marysville has added another receptionist, Miss Viola Schmidt, to his studio force.

C. B. Hemminger of Chico will leave the photographic business May first to attend to his almond ranch near that city.

The Thompson studio of Chico is showing some very fine samples.

Harry Zink has decided not to join the army again, but to stay in Chico and help his father in the studio as heretofore.

R. H. Post has taken over the Valentine studio in Redding for one year.

Mrs. C. C. Darling of Oakland has bought out Chester Stevenson of Ashland, Oregon; the latter goes to fight for Uncle Sam.

Bert Hinthorne's new location in Ashland, next to the postoffice, is a dandy. He has put in a stock of photo supplies.

C. W. Clark has returned to Roseburg, Oregon, and opened a ground-floor studio.

R. C. Barclay of the Kodak Shop, Eugene, Oregon, is doing some very fine work with the Probus-Mandeville photo oil colors.

Fern Cousineau is now with the Owl Drug Company in Portland. Miss Cousineau is a very fine colorist and oil painter.

F. W. McLaughlin has opened a new studio in Venice, near Los Angeles.

W. F. Baker has reopened his studio at Orange.

The Camp Kearny studio at Linda Vista is now in charge of D. C. Cameron.

Mrs. Ida Merritt of Redlands has removed to Fullerton, having purchased the Metz studio there.

J. M. Appleton has returned to his studio in Pasadena, after his visit in this part of the state.

W. C. Boxell is now with the Hartsook studio in Los Angeles.

In Los Angeles the Stagg Photo Service has moved to 738 South Hill Street; C. C. Brennen has moved to 424 West Sixth Street, and H. K. Shigeta has opened a studio at 206 South San Pedro Street.

Photographers' Association of Texas

The next convention of the Professional Photographers' Association of Texas will be held at Fort Worth, August sixth, seventh and eighth. As at the last, a regular studio will be conducted, and the best methods illustrated and explained throughout. A handsome array of prizes are offered, and for the first time in the history of such conventions, provision is made for the work of the pictorialist, the impressionist, from any part of the country. Particulars can be obtained from the Secretary-Treasurer, A. L. Blanchard, Hillsboro, Texas.

Photographers Can Render Service

Kendall Banning, Major Sig. R. C., Pictorial Section, War Plans Division, War Department, in a personal letter under date of March twenty-third, says that we might care to mention, and that the readers of CAMERA CRAFT might be interested in knowing, how photographers can render valuable service to the War Department by sending in pictures of value to the official files of the General Staff, pictures that will aid materially in the compilation of the photographic history of the war. It is obvious that the great mass of photographers throughout the country are able to get some occasional pictures of news value and our photographic friends, I am

sure, will be pleased to learn of this new form of service that they can render as an addition to that given by the illustrative news syndicates, prominent publications and shipbuilding and other corporations that are doing their share, most of the photographs being sent gratuitously by them. Major Banning encloses a form letter sent out to the principal newspapers of the country and this we are printing in full below:

WAR DEPARTMENT
OFFICE OF THE CHIEF OF STAFF
WASHINGTON

"GENTLEMEN:

"In the compilation of the pictorial history of the war, it is the desire of the War Plans Division of the General Staff to secure for the official files of the Army War College, a comprehensive series of photographs that illustrate the war activities of your city. Your co-operation is requested in the collection of such photographs as in your judgment should properly be included as a part of the permanent historical record of the part which your city has taken and is taking in this crisis.

"Among the photographs that may be included in this record are those that show the departure of local troops to the training camps or to the points of embarkation, the activities of the local war relief societies, including the Red Cross and the Food Administration, the arrests of enemy aliens and suspects, destruction of property attributable to enemy activities, sales campaigns for Government bonds and war stamps, visits of foreign officials, military equipment and methods of manufacture of equipment, the drilling of home defense organizations, draft scenes, enlisting scenes, entraining of troops and photographs of local commissions, boards and committees engaged in public service in connection with the war. In brief, this office desires any photographs accompanied by brief descriptive captions, which show the war activities of your vicinity.

"Arrangements have already been made with the principal illustrative news syndicates of this country to purchase unmounted prints of this description at the nominal rate of seven cents each, which is the price at which official United States photographic prints are sold to them.

"This price covers merely the actual laboratory cost of production. This office appreciates that your co-operation in maintaining this photographic record can be based only upon patriotic grounds and that the monetary returns to you cannot be an object.

"Should any of these privately owned pictures be eventually published, they will be published with a proper credit line to the owner on the basis of two dollars each for publication rights, payable on an exchange basis for official United States photographs.

"You are in a position to render a useful public service in forwarding to this office for selection, such photographs as you have available, or that you may secure through the readers of your publication, that come within the scope outlined above, and in forwarding at future intervals, such pictures that should be collected as a part of the permanent record of the war.

"Yours very truly,

"C. W. WEEKS,
"Lieut.-Col. Gen. Staff,
"Chief H. B., W. P. D."

Bass Bargain List, Number Six

We are just in receipt of the latest edition of the bargain list which is now issued monthly by the Bass Camera Company, and it certainly includes a most interesting assortment of cameras and other photographic goods at prices which are inviting. These are all sold under a guarantee, and any of our readers who may be interested in used cameras should send for a copy, addressing Bass Camera Company, Dept. B-12, 109 North Dearborn Street, Chicago, Illinois.

Efficient Machinery for Photo-Engravers and Others

Seldom has the character, or personality, or a firm been so satisfactorily expressed in its printed matter as is that of John Royle & Sons by there recently issued "Catalogue No. 300". Outwardly modest in appearance and dimensions; inwardly it is a veritable treasure store of beautiful half-tone engravings, admirable typography, and valuable information. In its two hundred and ninety-six printed pages are more than two hundred illustrations, all printed on the highest quality of super-coated stock, and in themselves of unusual interest to printers and engravers. No expense was spared to make this catalogue the best possible for its purpose, and the result is worthy of the aim.

Those familiar with the Royle organiza-

tion will recognize, at every turn, the high ideals, indomitable energy and unusual talents of Vernon Royle, the president and manager, who not only designs and builds superior machines, but is equally clever at illustrating and describing them. Many of the photographs, especially those of historical interest, were taken by him personally, and all the work has been performed under his direct supervision; the whole representing some fifteen years of planning and preparation.

In this catalogue are shown for the first time, a number of machines invented and developed by Mr. Royle within recent years, to meet requests from prominent engraving concerns, and now offered to the trade on a commercial basis. These include the Ellipsograph, the Micro-Edger, the Registering-Squaring Machine, and the motor-driven Etching-Tub Rocker, all of which have been approved by their original purchasers, and are of demonstrated value to photo-engravers.

Not all of the pages have been devoted to machines and accessories, however; the table of contents showing an introductory section containing "A Glance Backward", "Facts About the Business", and "Information for Buyers", while at the rear of the catalogue, under the head of "Generalities", is an even more instructive list of articles on subjects of general interest.

Photo-engravers, electrotypers, printers, stamp-makers, die-cutters, etc., should write at once for a copy of this Royle catalogue, No. 300, and we are advised that, so far as possible, all requests will be honored. Preference will be given to those who write upon letter-heads of their firm, stating the capacity in which they are connected therewith.

Goods Stolen

Trusting that any of our readers who may come across any of the goods mentioned will notify them, the Bass Camera Company, of 109 North Dearborn Street, Chicago, have sent us a list of goods that were stolen from their store, Saturday evening, March sixteenth. Following is the list:

Revolving Back Graflex, 5x8 B. & L. Tessar, f-4.5, Volute shutter, No. 2734522-55585; 1A Special Kodak, No. 2592-1844685; 3A Kodak, Range Finder Special; 1A Range Finder Special, Zeiss Anastigmat f-6.3, Compound shutter, No. 2586-1844613; 1A Range Finder, Cooke, Compound shutter, No. 2683-45079; 1A Range Finder, Cooke, f-6.3, Compound shutter, No. 2681-44582; 1A Range Finder, Cooke, f-6.3, Compound shutter, No. 2682-45310; No. 3 Ansco Vest Pocket camera, No. 3455-2688438.

The Burt Exposure Meter

In our advertising columns will be found the announcement of the latest candidate for the approval of the photographic fraternity, the Burt Exposure Meter. Its small, convenient size, its good wearing quality, its simplicity and completeness, all go to recommend it most highly. A reliable exposure meter is well worth any reasonable cost, as photographers are rapidly learning. This new meter would seem to possess several definite points of superiority that should recommend it to the attention of our readers. It can be obtained from dealers or can be ordered direct from the manufacturer, A. G. Burt, Jr., 10 S. La Salle Street, Chicago, Illinois.

The June "Photo-Era"

Frederick B. Hodges has contributed a special feature that will appear in the June *Photo-Era,* entitled "The Lake", illustrated with seven very fine large reproductions of photographs by Atherton Hodges. This alone will be well worth the cost of the magazine, to say nothing of the other articles, pictures and departments. Our readers interested in the literary and pictorial application of photography should not fail to secure this issue, either of their dealer or by sending the price, twenty cents, direct to *Photo-Era,* 367 Boylston Street, Boston, Massachusetts.

New "Photo-Miniature" Price

Effective May fifteenth, the price of *The Photo-Miniature* will be advanced to thirty-five cents. This the publishers regret is unavoidable, by reason of the ever-increasing cost of production; but, as this most excellent series of photographic hand-books, in the form of a monthly magazine, has always been worth much more than the old price, the new one will not be resented by the many admirers of that worthy publication. The annual subscription price is advanced to three dollars, and those including *Photo-Miniature* in their lists sent in for clubbing prices should bear this in mind.

As To Rodenstock Lenses

As we advised some months ago, the W. J. Lafbury Company were fortunate enough to have secured an exceptionally large stock of Rodenstock lenses before shipments ceased. Not only has the War Department purchased a great many of these lenses, but Mr. Lafbury has been putting in much time doing what he could to locate such lenses as the Signal Service requires. While the firm's stock is no longer complete, there is on hand quite a respectable variety of these excellent lenses, and intending purchasers would do well to write the firm, as just what is required might be in stock. The advertisement is to be continued and inquiries will be appreciated and given the best possible attention. Address W. J. Lafbury Company, 305 North Fifth Avenue, Chicago, Illinois.

Illinois College of Photography

Frederick C. Lee, class of 1916, Engraving Department, who has been occupying a position in Chicago since completing his course, has joined the colors. He visited the College April first before leaving for Camp Grant.

Mr. and Mrs. Heinemann of Chicago, visited their nephew, Walter Kruoup, who is a student of the Illinois College of Photography, while on a pleasure trip to New Orleans and Florida. Mr. Heinemann is one of the leading photographers of Chicago and, in company with his wife, had planned a trip to Panama and Cuba. Because of war restrictions on pleasure trips abroad, they were not permitted passage.

The Price Reduced

We are advised by the Herbert & Huesgen Company that by reason of the improved facilities for manufacturing which the large demand for their Duplex Rotary Print Dryer has made possible, they are enabled to reduce the price from one hundred and seventy-five to one hundred and fifty dollars. This is only another case of a larger output permitting of a lower price, even in the face of increasing costs of material. The high quality has been maintained; in fact, the new model has several improvements that add decidedly to the merits of this popular dryer. Circulars can be obtained directly from the manufacturers, Herbert & Huesgen Company, 18 East Forty-second Street, New York City.

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24th, 1912, for April 1st, 1918, of CAMERA CRAFT, published monthly at San Francisco, State of California, County of San Francisco.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Fayette J. Clute, who, having been duly sworn according to law, deposes and says that he is the Editor of the CAMERA CRAFT and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

Publisher, Camera Craft Publishing Company, San Francisco, California; Editor, Fayette J. Clute, San Francisco, California; Managing Editor, Fayette J. Clute, San Francisco, California; Business Manager, Fayette J. Clute, San Francisco, California. That the owners are Camera Craft Publishing Company, San Francisco, California; Harriette E. Clute, Trustee, Hanford, California; Romaine F. Clute and Clifford H. Clute, Beneficiaries, Mountain View, California.

That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are none.

That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest, direct or indirect, in the said stock, bonds, or other securities than as so stated by him.

(Signed) FAYETTE J. CLUTE, Editor.

Sworn to and subscribed before me this twenty-second day of March, 1918.

SID J. PALMER, Notary Public, in and for the City and County of San Francisco, State of California. My commission expires December thirty-first, 1918.

CAMERA WANTS

Advertisements of the above nature shown below will be inserted under this heading at the rate of fifty cents each insertion, for twenty-five words or less; each additional word, two cents extra, cash with order. Those of positions wanted inserted once free. No business advertisements accepted.

POSITION WANTED By first class Japanese retoucher; will work by piece. N. M., 1422 Geary St., San Francisco, Cal.

WANTED Photographic books and magazines in exchange for figure studies and prize winning landscapes. State what you have. H. Brodine, 913 Bryant Ave., Bronx, New York.

FOR SALE At Grand Forks, N. D., a one-man studio, netting better than $100.00 monthly. Owner now in U. S. service and will make extraordinary price and terms. For quick deal, write direct to L. R. Walker, care N. W. Ordnance Co., Madison, Wis.

FOR SALE Old - established kodak finishing studio, carrying kodaks, films, etc. This place is a money-maker and will pay for itself in four months. Reason, poor health. Will Hall, 29 W. Second St., Reno, Nev.

SALE OR EXCHANGE One No. 3 8x10 Century Studio camera, complete with No. 3 stand, 5x7 lens and 5-inch Packard shutter; outfit complete $35.00. Smith's Photo Studio, Colville, Washington.

FOR SALE One No. 10 Cirkut camera, 12 feet, with Turner-Reich lens and tripod, $225.00. One 5x7 Press Graflex $62.50. H. J. Harvey, 204 Camp St., New Orleans, La.

POSITION WANTED By competent woman, experienced in all branches of studio work. Address Retoucher, care Wertz Studios, 11 Pine Ave., Long Beach, Cal.

POSITION WANTED By an efficient young man as press photographer or in mountain resort. Address A. G. B., care "Camera Craft", San Francisco, Cal.

FOR SALE Eastman Folding Kodak, Special 3A Zeiss Tessar lens, series 2B, Compound shutter, plush lined leather carrying case. Bausch & Lomb rapid ray filter; outfit $75.00. P. O. Box 106, Albuquerque, New Mexico.

FOR SALE Conley model XV 5x7 camera, Bausch & Lomb rectilinear lens and shutter, leather case and two double holders, $14.00. L. C. MacDonald, Herkimer St., Pasadena, Cal.

FOR SALE Immediately on account of draft, only studio in town of 6500, located in Central Pennsylvania, doing $3000.00 business yearly; invoices $800.00, but will sell fully equipped for $400.00. Address Kepler's Studio, Renovo, Pa.

SALE OR EXCHANGE 21 jewel Elgin watch in 20-year filled open face case of 6½x8½ portrait lens; for late model Conley or Seneca 5x7 or 6½x8½ view camera with Ilex shutter and good lens or post card film camera. Also new $10.00 professional print trimmer for $5.50. A. Sutherby, Wellsville, N. Y.

WANTED Graflex 2¼x4¼ or 4x5. Will trade new No. 3 Eastman Special 3¼x4¼, f-6.3, speed 1 to 1/300 second. Fine for group scenes and lantern slide work. Purchased February 1, 1918. Mrs. S. C. Matson, 912 N. Shartel St., Oklahoma City, Okla.

POSITION WANTED By a young Chinese man as a printer, retoucher or general assistant; many years experience. Address E. Fong, 743 Grant Ave., San Francisco, Cal.

FOR SALE Studio doing good business, good location on main street, town of 3500 population, rent reasonable. Wish to go out of business. For particulars address Morrison Studio, Montesano, Wash.

FOR SALE Leading studio in a fine town. Doing good business, sickness reason for selling. Excellent chance for good man. Write Quatermos Studio, Marshfield, Or.

A SNAP A first class studio for sale, cheap, in the best town in Northern Georgia, about 6000 inhabitants. For particulars write J. S. Reese, Box 507, Cedartown, Ga.

SALE OR EXCHANGE 8x10 Holmes, Booth & Hayden portrait lens $25.00; exchange for No. 4 Panoram Kodak and outfit, Ithaca or Winchester Hammerless 12 gauge shotgun. Also Speed Graphic, 5x7 Wollensak, series II, tripod, 4 holders, tank, ray screen, $65.00; condition nearly new. Leslie Harmison, Walkerton, Ind.

STUDIO FOR SALE Thoroughly equipped, up-to-date studio in a prosperous thriving city in Northern Oregon. Has a well established profitable business. Full details to interested parties. Address T. P. S., care "Camera Craft", San Francisco, Cal.

BIG KODAK AND STOCK House for sale. Largest stock house and Kodak store in the intermountain country, Eastman agency, is offered for sale on account of ill health of owner. Stock and fixtures will invoice $25,000.00 or better. Net profits 1917 were approximately $5500.00; first three months of 1918 shows nearly $3900 increase in business over 1917. Having a large finishing business and nice professional trade, as well as amateur. Have a nice clean stock of goods and long lease on present quarters on the best block in city of 120,000. A live wire can make this business pay for itself in five years or less. Unless you really mean business, please do not bother me. Will take $25,000.00 to buy this place, which merely covers stock and fixtures, you are not paying a nickel for good will. If you are looking for a good business opportunity ready for you to step in, it will pay you to investigate. Full particulars to responsible parties. Address Intermountain Stock House, care "Camera Craft", San Francisco, Cal.

FOR SALE Studio in University town with a large high school, 2700 population, $100,000.00 payroll, no opposition, rich farming and dairying country; well equipped, will sell with or without lens or cameras. No coupons sold here for 10 years. A snap for a few hundred dollars cash. Address A. B., care "Camera Craft", San Francisco, Cal.

FOR SALE One of the best paying amateur finishing shops and studio in the Northwest, population 7000. Address M. J., care "Camera Craft", San Francisco, Cal.

FOR SALE One 3B Dallmeyer photo lens, cost $153.00 for $75.00. One 5x7 Darlot lens and Lowe shutter and camera and stand, cost $106.00 for $55.00. W. H. Protzman, Amboy, Wash.

FOR SALE The leading studio in the best city of the Pacific Northwest. Big shipbuilding plants employing thousands of men; cantonment of 20,000 soldiers, population 275,000, and growing rapidly. Location best in the city, new eight-story building, three elevators; rent $180.00 per month. Business of over $20,000.00 last year; this year's business so far is much better than last. The best buy you will find if you wish to make money. A no-coupon studio, doing straight legitimate business. Price $5000.00 cash. Reason for selling, wish to enter the service. Address C, care "Camera Craft", San Francisco, Cal.

XV No. 6 JUNE, 1918 Price, 10 Cents

CAMERA CRAFT

SAN FRANCISCO
CALIFORNIA

The camera in the air

will play a most important part in the winning of the war. The exacting demands of the aerial photographer require extreme care in the selection of a printing medium.

GRADATION must be such that finest variations in tonal quality shall be perfectly recorded and every object depicted perfect in every detail.

LATITUDE must be broad enough to compensate for the varying densities of negatives made under different light conditions.

SPEED must be sufficient to permit prints to be made in record time with whatever light source is at hand.

ENLARGING CYKO

Regular and Contrast Grades

produces prints which fulfill these requirements by registering all that the observer can demand.

For commercial and studio photography a paper that is found satisfactory for aerial work cannot be far from the ideal.

ENLARGING CYKO

is a *chloride*, not a bromide, paper, possessing great speed, and unlike a bromide paper, gives, in projected enlargements, contact print quality. That is why it is such an overwhelming success.

ANSCO COMPANY

Binghamton, N. Y.

THE LIBERTY LOAN
By R. B. MARSH

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

FAYETTE J. CLUTE, Editor

CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

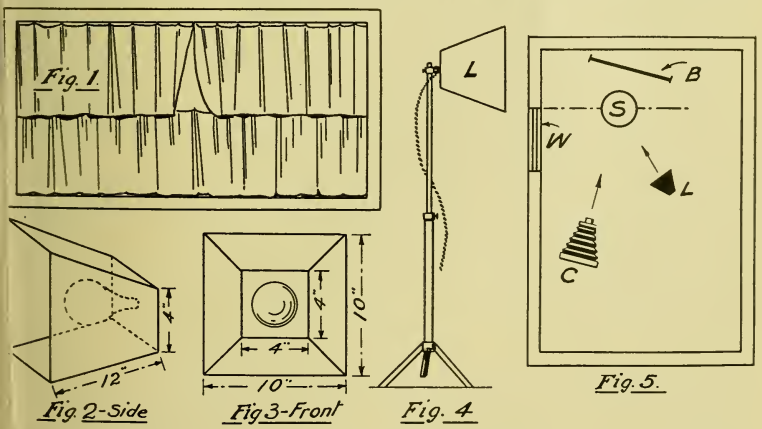
VOL. XXV JUNE, 1918 No. 6

Home Portraiture

By S. A. Schwartz, A. M. C. E.

With Illustrations by the Author

A field in photography which has received little attention from the amateur, but which when mastered will give the most satisfactory and gratifying results, is indoor or home portraiture. Unfortunately a few attempts, with little or no success crowning his efforts, will discourage the average amateur to such a degree that he will, in the majority of cases, give up all hope of ever succeeding,



INDOW SHADE, SPOT-LIGHT, AND ARRANGEMENT FOR PLAIN PORTRAIT LIGHTING
In the last, S is Sitter; W, Window; S L, Spot-Light; C, Camera, and B, Background

and make no further attempts. As a matter of fact, the making of portraits at home is by no means a difficult task if the operator, professional or amateur, will remember the old hackneyed and threadbare expression, "Festina lente",—make haste slowly.

JUST A BOY—Graflex plate, Verito lens, window and one spot-light, one and one-half seconds exposure. No retouching

Proceed with caution, pay attention to every detail involved, and consider with utmost care each item which presents itself in the picture space. Composition, grouping and arrangement, in direct ratio with their importance, is the predominant feature of every portrait. I regret to say, however, that is rarely given any serious consideration and is often completely neglected.

The materials needed are few and can readily be made at home, and their acquisition will not involve any heavy financial expenditures. A 5x7 camera with a bellows extension of about thirty inches will probably be found most useful. The choice of the lens is a matter of prime importance, and this, of course, depends entirely upon the amateur and to what extent financially he wishes to take the matter up. In my own work, I am employing rectilinear, as well as anastigmat lenses, with a recent additional acquisition of two Verito diffused focus lenses, having a covering capacity of 5x7 and 8x10, respectively. The latter I use for the making of very large heads on a 6½x8½ plate. A shaded or graduated background, a window shade (Figure 1), and two one hundred Watt nitrogen bulbs for auxiliary illumination (Figure 2), will about complete the list of accessories required.

Figure 1 is a wooden frame made of such a width that it will fit snugly into the frame of the window. This is fitted with two sets of curtains, preferably made of some white material, arranged so as to slide back and forth on a wire, as shown.

The reflectors used in connection with the electric bulbs previously men-

tioned, are also home-made accessories constructed from an old soap box, as per Figures 2, 3 and 4. In order to increase the illuminating power, the inside of these are given two coats of "inside white", followed by two coats of white enamel. A handy way to support these reflectors, and at the same time be able to use them in almost any position, is by means of an old music stand, which may be readily adjusted to almost any position. (See Figure 4).

Although ordinarily a room with a northern exposure is to be preferred for portraits amid home surroundings, yet with the auxiliary illuminant almost any room may be rendered available for work of this nature.

For experimental purposes, select the best lighted room and one or two good subjects. Let your sitters assume a natural easy, careless position in that portion of the room which best lends itself to your purpose. Illuminate one side of the face with the light coming from a window, properly controlling this light by the judicious use of the small curtains. The shadow side of the face is to receive its light from the reflector, which may be either a white sheet, or the auxiliary illuminating device referred to previously and shown as L in the several diagrams herewith.

PORTRAIT—Cramer plate, Verito soft-focus lens, two seconds exposure. Slightly retouched

In order to minimize the exposure, keep your diaphragm as wide open as conditions will permit, without of course sacrificing any of the important details; especially such details as tend to emphasize that the sitting is not one of the conventional studio portraits. In other words, one not taken in studio light with studio surroundings and under studio

conditions, but one which brings to the attention those salient features of real portraiture which have contributed so vastly towards the popularity of home portraiture.

In order to vary the intensity of the light, and thus control the gradation of tone on the subject, a frame covered with from one to three thicknesses of tracing cloth, or some similar substance may be placed before the reflector. This, of course, is not absolutely essential, as a similar result may be produced by either increasing or decreasing the distance of the spot light reflector from the sitter.

To avoid tiring your sitters, do not, during your preliminary work, have them sit in a strained or uncomfortable position, especially so if your subjects are children or people who are inclined to be somewhat nervous. Talk to them, or keep their minds otherwise occupied, being on the lookout at all times for a favorable pose or expression. The secret of home portraiture success lies in photographing the people among their home surroundings in a natural way, and not as they would be at a party or at a studio.

Before making your exposure, shield your lens by using some kind of home-made hood for the purpose, give your subject a general survey and see that the minor details harmonize. Make two negatives of the same sitting and developing them one at a time, using the first plate as a guide in developing the second.

Plain portrait lighting, probably the most popular, requires that the subject be placed in a postion far enough away from the window, so that the rays of light will fall upon the sitter from an angle of about forty-five degrees, so as to secure perfect atmosphere and a great amount of roundness. This is most easily accomplished by having the sitter at a distance from the window equal to the width of the window sash. Should the shadow side of the subject, under these conditions appear too dark, these shadows may readily be brightened and rendered more transparent by the aid of the reflector or the auxiliary illuminant. The general arrangement of the sitter, camera, background, as well as the reflector or spot-light may readily be seen in diagram, Figure 5.

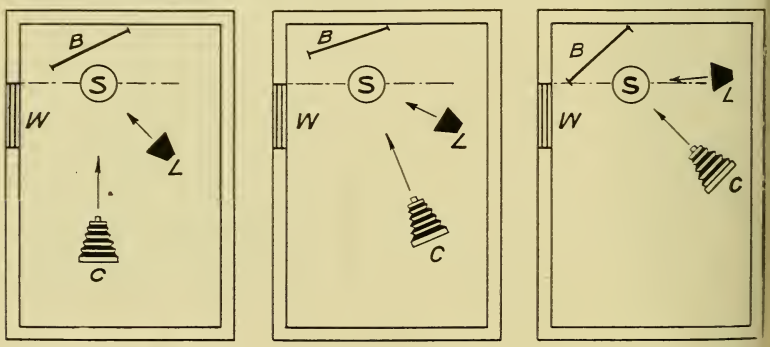


Fig 6. Fig 7. Fig 8.

ARRANGEMENT FOR REMBRANDT LIGHTINGS—S, Sitter; W, Window; S L, Spot-Light; C, Camera, and B, Background

TWO PORTRAITS—Graflex plates, Verito soft-focus lens, light from window and two spot-lights, one and one-half seconds exposure No retouching

In Rembrandt lighting, as opposed to the previously discussed method of lighting the greater portion of the face, is in shadow, and the high-lights are strongly defined. The sitter is placed in practically the same position, the camera, however, is moved further from the light. In making portraits of this type, care should be exercised that the transition from high-lights to the deepest shadows shall not be void of all atmosphere and transparency.

There are three distinct lightings of Rembrandt character, as follows: Full or nearly full face, with illumination from the side; two-thirds side view with the sitter turned more or less towards the source of light; and, full profile, with almost the entire face in shadow, only the outline receiving a strong light. This last style is also known as "line lighting". Each of these three effects may readily be obtained by a slight variation in the position of the camera, as well as the reflector or spot-light. (See Figures 6, 7 and 8.)

Great care has to be exercised in the finishing of a portrait, as that is really the element by which the worker's ability as a photographer, be he amateur or professional, is judged. Some of the finest portraits, from an artistic point of view, have been hopelessly spoiled, and in that way made the topic of rather harsh, and in many cases, unjust criticism, simply because the negative was retouched too far, the wrong selection made in the choice of the printing medium, or something of the kind.

It is an easy matter to destroy the character in the face, making it an absolutely expressionless mass, by over-retouching it. I would therefore not consider it advisable for any amateur to do any retouching at all, unless he has had

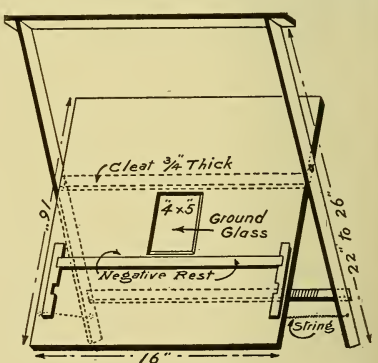
a great deal of experience in the work. Let him remember, however, that some of our rough grades of paper of the professional type adapt themselves excellently to negatives which, on smooth paper, would only yield fair results after a considerable amount of doctoring.

In conclusion, let me state that although no mention has been made in the foregoing paragraphs of negatives smaller than 5x7, this by no means excludes the owner of such an instrument from the field of home portraiture. I have seen excellent portraits, negatives made with a vest pocket camera, portraits which, when enlarged to 5x7 or even a greater size, lost none of their fine qualities.

A Simple Retouching Easel

By C. A. Harris

So much in the way of utility and convenience is comprised in the simple form of retouching desk or stand which is illustrated in the drawing presented, that every serious worker may be excused in his determination to have something of the sort. No doubt many are deterred from attempting the use of pencil and etching knife because of the skill and practice thought to be necessary for perfection in all-round work, but elementary forms of retouching may be readily acquired and a simple treatment of the negative is often sufficient to produce improvements in the resulting print. One learns in this way how best to handle defective negatives; to eliminate pin holes, scratches and blemishes of all kinds and shapes; and sometimes certain lines of a picture can in this way be accentuated or subdued. For example, suppose the motive of the picture is a leafy path through the dim forest, but the path itself is rather obscure. This can quite readily be lightened by using the pencil, as fine detail is not necessary and the operation would not demand unusual qualifications. However, for any and all kinds of work on the negative, some form of desk or stand becomes a factor. It may be used on a small table in front of a window, and is equally good at night with a light placed directly behind the groundglass and a sheet of white cardboard arranged at an angle to reflect the light. The board is made of ordinary boxwood, three-eighths or a half inch thick. Select two pieces of the tongue-and-groove variety, so as to be light-tight and of the dimensions given.



The groundglass should be fitted into a rebate cut in the center of the board so as to be flush with the surface of the latter. Mark out and cut the opening

for this 4x5 sheet of groundglass before cleating together. A substantial cleat across the back just above the working aperture provides for the screws at either end upon which the frame part turns. If the above mentioned cleat does not seem sufficient, others can be added top and bottom, preferably on the back. The strips which form the supporting frame can be made of the same material used for the board. The slant is regulated by the length of string used and may be adjusted for light and convenience. When in use a cloth is arranged to cover top and sides. Any cloth—a focusing cloth if at hand, or in case of emergency one's jacket may serve almost as well.

Any light excepting that which comes through the negative, even a nail hole or reflection, is somewhat distracting, so it will be well to paint the side towards the operator a mat black. With reference to the use of dead black, paint composed of lamp black, shellac, etc., it has been my experience that it either rubs off on the hand or soon becomes shiny, if subject to much handling. Recently I tried for this purpose one of the wood stains, Johnson's is good, and find it well adapted for producing a mat black upon soft wood without the drawbacks mentioned. Of course, the jet black stain should be selected. The stain or dye sinks into the fibre of the wood, while any kind of paint is applied to and mostly remains a coating on the surface, liable to rub shiny in the course of time. If only a very small amount is needed, say for blackening camera parts, and the stain is not on hand, a black water color can be made to serve this purpose quite satisfactorily by applying several coats.

An Excellent Stereo Equipment

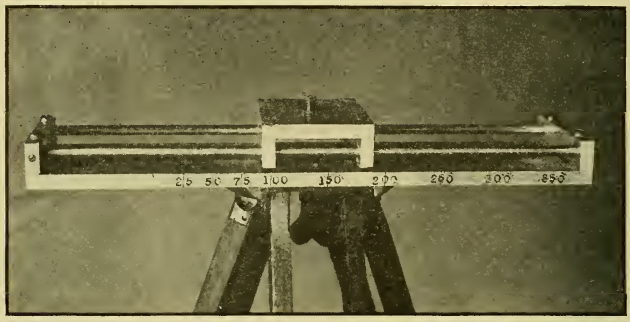
By John B. Gale

With Illustrations by the Author

In the March issue I gave a description of a slide device, fitting on the tripod head, that I had found both handy and efficient in the production of stereograms of inanimate subjects, using an ordinary 3¼x4¼ camera in making the two separate exposures required for the complete stereoscopic picture. This simple piece of apparatus was found so well suited to the work that I have recently constructed a new one that is not only better finished, but has a wider range of capabilities through being somewhat longer, the length over all being ten inches, thereby allowing a separation between the two positions of the lens of seven and one-half inches, when required.

The figures on the edge of the slide show the distance in feet at which the farthest object will show the best stereoscopic effect when the camera is moved, to bring the right hand edge of the slide directly over one of these numbers for the second exposure, after the first exposure has been made with the slide at the extreme left of the slide frame. The slide supporting the camera, as well

as the main frame work, is aluminum; the slide rods are made of German silver, in order to the better withstand wear, while the screws are of brass. And



right here let me caution against the use of rivets. I tried them, but found the aluminum is so soft that the rivets will not hold. Almost anyone can, if he is not properly equipped himself, find some friend who is in a position to put together this simple piece of apparatus. And I can assure those who will add it to their equipment that they will find a constanct source of gratification and enjoyment in its capabilities in the way of producing, with an ordinary camera,

the most satisfactory stereoscopic pictures of any subjects that do not embody movement sufficient to prevent two exposures being made.

The illustration herewith shows the construction very clearly; and as can be seen, the marks with their corresponding figures are so arranged that the first four are half an inch apart, while the remainder are placed at intervals of one inch. With the camera at the extreme left of the frame, as one looks at it from the back of the camera, there is an allowable shift of seven and one-half inches to the other end where the right side edge of the slide comes immediately over the number showing the proper position for objects situated at a distance of three hundred and fifty feet, or more. The other numbers indicate the slide positions for their respective distances in the same manner.

Suggestions for the Receptionist

By William Westman

With Illustrations by the Author

The receptionist should always bear in mind that her least tone or action has its effect upon the customer, who, coming in as a stranger, is particularly susceptible to suggestions. If she has to fumble about and pull over piles of samples in order to find the one desired, the impression is that visitors are few and far between, and the few that do come in do not cause so much trouble in being waited upon. The samples most frequently shown should be nearest at hand, and all of them so arranged that any one wanted can be at once located. She should remember that, despite the fact that these samples have passed before her own eyes a great number of times, they are, no doubt, quite new to the particular customer in hand, and she, the receptionist, must put enthusiasm for them into her talk and actions. And above all things, the samples must not be allowed to become soiled, and, of course, they should not be tossed about as if they were something of no value. The customer is not to be blamed for taking a low estimation of the value of the pictures if the suggestion is made by the ill treatment of them by the people who are responsible for their production.

PORTRAITS OF MEN ARE NOT DIFFICULT

Learn to handle the samples carefully with the fingers just engaging the edges, much as you would a very sensitive emulsion coated plate.

Except when the customer states, right on the start, the amount she wants to pay, one should bring forward something that is just a little better than the usual run of work, following this up with something just a little better still, taking care that she can clearly explain why this last is better. Showing the most expensive styles first leads to an awkward position if a customer should ask if something better is not available, as they frequently do. Even if the customer tells you just what price she wants to pay, and even if that be the price of a very good quality, a little better grade should be shown, but it should be put forward without any effort to influence the customer or belittle the amount she has mentioned as her limit of expenditure. If this is not done, the customer will sometimes find fault later and blame the studio for not having shown her these better goods, ones that are really more to her liking, even at the higher price. When this last happens, one has no good defense to offer, as it is hardly good policy to explain that one failed to show the better goods because the price was too high for the customer. When these better specimens are shown, it is well to bring forth something of a lower grade, as the comparison will be to the advantage of those first shown, not infrequently resulting in the selection of the better quality.

THE PRIDE OF THE FAMILY

Above all, never ask the customer, "About what

price?" It is unfair, to say the least, both to the customer and the goods you are trying to sell. The customer is rarely looking for pictures at a certain predetermined price. What she does desire is the largest possible amount of gratification of her individual taste in the matter of pictures at the price most nearly in accordance with such gratification. What she wants is value for her money, and that value is not expressed in square inches of surface, amount of embellishment in the way of a mount or folder, or any other tangible quality. It is a value varying with the customer, perhaps a value created in the customer's mind by having the difference between the several grades of work explained to her, preferably with a due consideration of her individual tastes in the matter. This last can generally be easily and quickly determined by observing how the first few samples are received. If the customer gives only a casual glance and shows no interest, at once put that sample aside and show something else, taking a hint from the lack of interest shown and avoid showing similar pictures.

A PORTRAIT OF A CHILD

Always arrange matters so that the pictures can be shown to the customer in a good light; and if conditions will permit, arranged so that the samples can be taken to one side and the customer made comfortable, much as one would seat a friend in a suitable chair and good light before giving him a portfolio of fine prints to enjoy. Asking the customer to stand at a counter or walk about from rack to cabinet savors too much of the grocery and the department store, and while talking to the customer, do not allow of any interruptions, do not allow your attention to be diverted. If you must answer the telephone or give some other matter your care, do it as quickly and quietly as you can, asking the customer to excuse you before going, and perhaps apologizing for the interruption as you return. Give the visitor, who is "just looking around" all the care and attention you can; and, no matter how trying the customer may be, keep your temper, keep pleasant. Frequently the visitor is fresh from some

store or other place where she has been treated in an overbearing way and, on coming to you, adopts an aggressive manner as a matter of defense. If not, if her trying manner is quite natural, she is to be pitied, and the receptionist has no excuse for allowing the customer's vexatious manner to influence her own.

And above all, do not talk too much and do not show too many samples or styles. Doing either of these things confuses the customer who may later be dissatisfied with her selection made under pressure of this kind. Let the customer do all the talking she will on the subject of pictures, to the end that her likes and dislikes may be disclosed. Watch closely and the number of samples that can have no possible interest for the particular customer in hand will be found to be surprisingly large. When a sample is shown simply to emphasize the good quality of a better or more desirable size, do not leave it about, but immediately it has served its purpose, put it aside and out of the way.

A CHARACTER STUDY PORTRAIT

And under no pressure of suggestion or appeal allow yourself to run down the work of another studio. The customer may appear to be influenced, for the moment, by such talk, but there is always a reaction that is unfavorable. There is, perhaps, no line in which it is less idle to make invidious comparisons. A portrait by the best photographer in a town may not suit the particular customer, as well as one made but a few days later by one whose average work is quite mediocre. The customer's taste may not be such as to assure an appreciation of the best work, and even if that is not the case, the customer may have been in a more propitious mood on one occasion than on the other. All that your particular studio can undertake to do is to make its best efforts towards pleasing every customer

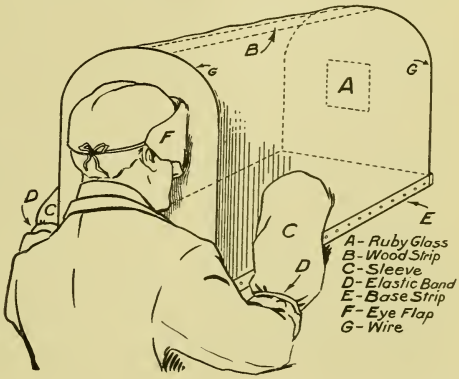
by giving of its best skill and its fullest application of the facilities at its disposal. If that skill and those facilities excel, the likelihood of the finished pictures doing the same is, of course, increased. But it is hardly advisable to emphasize even that point, except as it may be suggested in the behavior of the receptionist as her acquaintanceship with the customer unfolds.

It would hardly seem necessary to advise against showing styles that are no longer turned out, or mounts that are not stocked in sufficient quantity to fill the customer's orders, yet these last two errors are being committed every day. Know just what mounts are on hand and know exactly what style of pictures are adapted to them. Also know the price of every possible combination of mount, print and finish that is at all consistent. If a certain style of picture is wanted, and the studio is not prepared to turn it out, explain just why it is no longer offered and show the customer something that is better value and more pleasing for the same price. Never question the customer's taste by referring to something wanted as being out of style, no longer in demand, or anything like that. The better explanation is that the style wanted has been superseded by something that is better value as fitting in better with the regular output.

A Portable Dark-Room

By Russell J. Waldo

I take not a few pictures when away from home, away from any convenient place to do developing; and, quite naturally, some of these are such that it is very desirable, and I am sure of a good negative before leaving the locality. To make it possible to develop these negatives wherever I might happen to be, I devised a piece of apparatus that answers the purpose admirably, while still being both handy and portable in the extreme. It takes up practically no room in a trunk and by being made a little smaller, could be carried quite nicely in an ordinary suit case.



The bottom of this one I use is a piece of inch board, two and one-half feet long, and two feet wide. Half-inch stuff would answer, were it the kind that is made up of two layers with their grain crossing, or at an angle to each other. This base is fitted with a "prairie schooner" form of top by erecting at each end a stiff wire

frame or bridge, so arranged as to fold down flat on the board when not in use. This is easily achieved by having the ends of the wires bent at an angle and inserted through staples driven into the wooden base, of course taking the cloth cover with them. This last is made of a piece of heavy black dress lining, large enough to reach over the top and be tacked at each end to the under side of the board. Instead of driving the tacks in the cloth, place a strip of thin wood over the cloth and drive the tacks or thin brads through both, thus making a tighter joint. The edges of the strip are sewed to the two wire frames, care being taken that no holes be left for light to enter. It is best to fit and sew on the two end-pieces first, so that the edges of the top piece can be sewed to the wires in such a way as to make a nicely finished job. In one end-piece should be sewed a ruby glass about 4x5 in size, and in the other end fit a short hood, something after the style of those in a Graflex camera, provided with tapes to permit of its being fastened to the head. The two sleeves are made quite large and full to permit of the introduction of trays and solutions. In one sleeve the elastic bands used to hold it in contact with the arm is left separate for the same reason, the other being attached a few inches back from the free end. In use, I first adjust the sleeve having the free elastic band, and then push the other up onto the free arm working from the inside. A light strip of wood, just long enough to reach from the top of one wire bridge to the other, each end fitting into a little pocket made in the seam in the black cloth covering, holds the two wire frames apart and upright, completes the equipment. These pockets can be on the under side of the top so that the stick can be introduced from the inside after the sleeves and elastics are adjusted. This facilitates getting the sleeves and elastics in position by reason of the cloth cover being more slack than after the end frames are braced up solid by the stick.

A few strips of electrician's adhesive tape will help in making a light-tight joint around the edges of the ruby glass. A piece of wire bent to the proper shape will greatly simplify the making of a snug fit above the eyes for the hood, and a semi-circular piece of wire might be an improvement over the tapes used to hold the hood to the head, as no tying of the ends would be required. I regret that I cannot show a picture of the device, as it was taken along by a soldier friend leaving for France, and a new one has not yet been made.

The device can be used on any table with a lamp in front of the ruby light, or with that end facing a window. It can also be used for loading holders, and on more than one occasion I have used it to remove a jammed plate or film that would otherwise have been spoiled. Of course, this could not be done were the sleeves not large enough to permit of the entire camera being introduced.

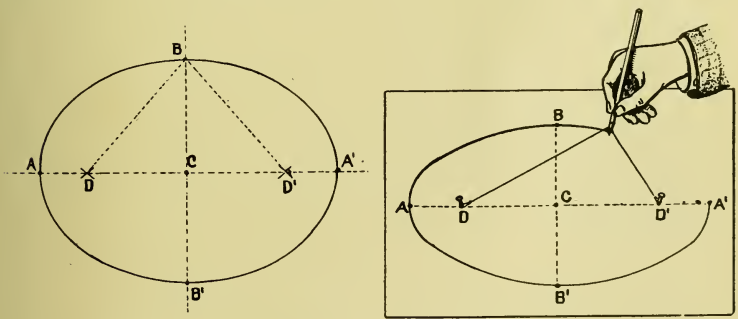
Choice in color corresponds to the degree of sensitiveness and education possessed by the eye. The barbarian and the infant seize only the most striking notes in the color-gamut. But as age, training, or civilization advances, the individual appreciates the semi-tones, the quarter notes, perhaps even the finer divisions of the chromatic scale.—*The Craftsman.*

Cutting Oval Masks

By Charles A. Harris

At times most photographic workers have recourse to oval masks in the production of prints, or they desire oval mats for framing and other purposes. Although certain forms of the smaller sizes can be readily cut with a print trimmer and brass form, it is quite essential that one be able to produce these oval masks or mats having definite lengths and breadths not found in the stock sizes; or, if found, rather expensive in the larger sizes. So equipped one can provide the oval form required for each piece of work with the same facility, as in the case of the rectangular masks. Aside from the employment of an expensive machine, the easiest and best way to draw the oval, so far as I am aware, is practically as described, some years ago by F. H. Mann, of Washington, D. C., in connection with the two sketches herewith.

A A1 is the desired length of the oval, and B B1 the width; C is the exact center where the two lines connecting A and A1 and B and B1 cross. Using a pair of dividers, or the straight edge of a card, measure off the distance from A to C, or one-half the length of the oval. Setting one point of the dividers, or one mark on the edge of the card, as the case may be, at B, place the other point of the dividers, or the other mark on the card at that point, where it will just touch line A A1, this, of course, depending upon the proportionate width of the oval. Make a mark here, D in the sketch, and do the same, to

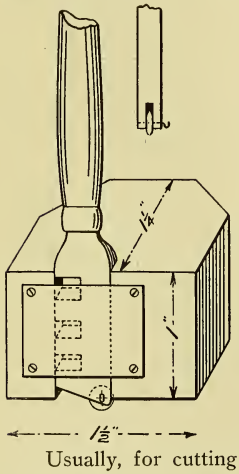


locate point D1 in the other end of the oval. Drive in pins at D, D1 and A1, and then tie a stout linen thread snugly around these three pins, one of the points at D1 being, of course, included within the loop. Remove the pin at A1 and insert the point of a sharp pencil in its place in the loop of thread. Slide your pencil around inside the thread, while keeping the latter taut by an outward pressure thereon, and it will cross B1, A and B, in turn, giving an oval the exact width and length desired. In the sketch the thread is shown with its

ends fastened to pins at D and D1, when in reality its ends should be tied together, forming a loop long enough to reach around the two pins and include the pencil point in any position on the oval outline, as it will if the directions are followed.

Now for the particular purposes mentioned above, it is not the outline alone that is wanted, but rather an oval mask. Cutting out the outline with knife or scissors is not always easy if one would secure perfection, unless indeed, one may be something of an expert with these implements. Using the scissors, small variations from the true line show quite plainly upon the print, and as for cutting the oval free hand with a knife, I have never attempted to do it, though I have seen the possibility of this method set forth in at least one article upon the subject. However, it will be found quite feasible for one to cut the oval with the same facility as described above for drawing the outline, by substituting in the operation a cutting wheel for the pencil.

By overhauling the available stocks of glass cutters, I found one, called the "Red Devil", in which the wheel revolved with a minimum of wabbling and side-play, and this I purchased, price ten cents, and later sharpened the wheel for paper-cutting purposes. This sharpening is best done by cutting a narrow slot or groove in a piece of wood, filling it with fine emery powder, and running the wheel back and forth therein. Now, if a small hook is devised that shall be located opposite the center of and as close to the wheel as possible, a hook through which the guide thread will run smoothly, one can, when used as described, make a clean cut just outside the thread in the same way as the pencil was used to draw the outline on the inner side. This hook is provided by drilling out the axle of the cutter as furnished and, in its place, fitting a new axle, cut from a longer piece of the same gauge wire, the extra length being bent up to form a hook or open eye projecting out as a continuation of the axle. The hook is just large enough for the required purposes, and made as close as possible to the side of the cutter. Use special care with reference to this fitting, as well as to driving the nails mentioned later, remembering that the business end of the cutter is made of cast iron and is easily broken.



Usually, for cutting glass, the instrument is held at an angle, but for this work an upright position is more convenient, and as the thread provides no support to assure a perfectly upright position of the cutter, as does a straight edge or ruler when cutting glass, a "holder" must be provided. Take a piece of inch wood and cut out a piece 1¼ x1½ inches, and in the longer side cut an upright recess that will just take the shank of the cutter in such a position that the cutting wheel, which is at the back thereof, will be located directly below and in the center of this one and one-half inch side of the block. The cutter shank should fit the recess snugly, the wheel projecting below the under

side of the block just sufficient to cut nicely when the latter lies practically flat on the material in which the oval is being cut. So adjusted, fasten the cutter securely in position in the block, as regards any possible up and down movement, by driving a couple of small nails through the openings or slots in the back of the shank. A small brass plate nailed across the front of the recess in the block will hold the cutter firmly in its place and completes this contrivance or block-like handle that insures the perpendicular position of the cutter. As the original handle serves no particular purpose, it might, if desired, be removed as a matter of added convenience.

THE HOMESTEAD By G. E. VALLEAU

As in this operation, there is apt to be more force applied than with the pencil, it will be well to replace the pins mentioned with wire nails, filing off the heads to permit removing and replacing the paper for mask. Also the thread must be such as to eliminate any stretching. If necessary, use a double thread, which will be sufficient, if a heavy linen variety is at hand. I use the thread preferably because it is flexible and smooth. Suppose now we see "how they come out", and proceed with results. Prepare first a smooth, flat board, and upon this place the paper for the mask. With rule and dividers, the oval form required is now indicated in the manner described, allowance being made in the measurements, of course, for the difference in position, the wire pins driven and thread prepared. Remove the sheet of paper carefully and place on the board a piece of zinc, somewhat larger than the oval to be cut, the upright nails protruding through holes made in the zinc. In place of round holes, slots can be cut in the zinc along a central line, and thus the same piece utilized for several sizes within such limits.

Lay some strips of cardboard, the thickness of the zinc, around the edges of the latter, to provide an even surface for the block while cutting. The paper is now replaced in the original position and being larger than the zinc, is thumb-tacked to the board at the four corners. Larger sizes will require a greater number for security.

The next step is to draw with a pencil the oval as prescribed and regulated by the thread just prepared, the purpose of which is as follows: While in operation, the cutter side of the block, which in effect is a straight line, must

follow the curve of the oval in such a manner as to form a line perpendicular to the arc. This is quite readily done with the penciled outline as a guide to follow. Another point to remember in order to avoid trouble is that the thread must operate parallel to the surface of the paper. Now the thread, where it engages the hook, is raised somewhat from the surface beneath, and is accordingly made parallel by placing a couple of buttons of proper thickness, and about a half inch in diameter on the two pins or nails, D and D1, before commencing the cutting operation. Because of their smooth surface, which is desirable, I use two ordinary bone buttons, with holes drilled through their centers, for this purpose. Now attach the cutter and adjust the knot of the thread so that it will be just behind the wheel or hook when the cutter is at A or the starting point. Holding the paper firmly with the fingers of the left hand and, making sure the thread is pressed down to the buttons at all times, proceed with the right hand to make the complete cut, gradually, in the operation, walking, or rather side-stepping around the small table which should be used in this connection. So doing, the same relative position is maintained from start to finish. The movement must be steady and continuous, and any sections not cut through, separated with the scissors afterwards. The tension on the thread should be uniform, but only sufficient to keep it taut. The principal pressure should be downward, so as to insure a good cut. With a little practice on waste paper, the necessary skill is acquired to produce practically a perfect oval mask and easier than our description might, perhaps, lead one to imagine.

The circular form of mask is, comparatively, simple in execution. The thread representing one-half the diameter, is attached at one end to a central pin, and at the other to the cutting wheel. The use of a thread not being essential, as with the oval form, it would undoubtedly be the better way to use instead a thin strip of wood fastening one end to the block carrying the cutter and at the proper distance from the wheel, a hole for the central pin. This would make the connection solid between the central pin and the wheel with no opportunity to waver from the true line.

For Photography Is An Exacting Master

As Michael Angelo said of art, so we may say of photography, the painting with the finger of light: "It is a jealous thing; it demands the whole and entire man." We may bring to it all we know, or can know, of physics, chemistry, astronomy, mechanics, geometry, and drawing, and still it will ask for more. But it also offers and gives, a goodly reward; and whoever has studied these things in the earnest prosecution of photography has found his knowledge of them corrected, deepened and enriched by the use of the camera, which is at once the most truthful recorder of the kaleidoscope changes of the visible and invisible phenomena of nature, and at the same time may be made the most obedient servant in the retinue of art.—William M. Murray.

Hypo-Alum Toning of Developing Papers

By Frank B. Gerrens

I have been asked to set down, for the benefit of other readers, my method of securing sepia tones by the hypo-alum toning process. There is really nothing new about the formula or method I use, both have been published and republished, both in the magazines and in the instruction manuals gotten out by the paper manufacturers, and yet quite a few seem to fail in getting good results. I believe the main trouble lies in their not using enough care in the matter of giving the print the correct exposure and no more or no less. One will find that if the exposure is right, the print will come up to about the right density in the developer and then seem to come to a stop. If the exposure is too long and the print develops too quickly, if it has to be rushed into the short stop or the fixing bath in order to keep it from going too far, the best hypo-alum bath will give a yellowish instead of a sepia tone. On the other hand, if the exposure is too short, so short that development has to be forced or prolonged in order to secure proper density, purple tones will be the result.

The hypo-alum bath for both hot and cold toning is made as follows: Dissolve one pound of hypo crystals in one gallon of water, heat to the boiling point and then add, slowly, four ounces of powdered alum. This boiling should be for at least three minutes, with constant stirring, a glass or wooden rod or paddle being used. When this solution is cold, another, made up by adding forty grains of silver nitrate and forty grains of common salt to an ounce of water, is to be added. This should be put into a bottle and allowed to stand for twenty-four hours when it is ready for use. If used hot, the desired temperature is best secured by using two enamaled iron trays, the inside one containing the toning bath, and the other or under one, plain water. The bath must not be allowed to become too hot and the tray should be kept covered as much as possible to avoid the loss of the sulphur given off. When the bath is cold and standing, there will be a white sediment at the bottom of the bottle, the liquid above being clear. When heated it will become milky and white looking. If not clear and white; that is, if not free from sediment at that time, add a little fresh stock solution. This last is made up just the same as the bath described above, except that the silver and salt solution is not added. As the bath is used, there is a constant accession of silver from the prints treated, so that there is no need of adding any more, once the bath works satisfactorily. This explains why some workers find their hypo-alum bath working better and better as it grows older. They started with it deficient in silver and did not secure good tones until enough silver had been abstracted from the prints passing through it.

After each toning one will find that a certain amount of the bath has been

abstracted in removing the prints, and this shortage should be made up by adding some of the new hypo-alum stock solution. This keeps the bath uniform and up to the amount required to nicely fill the tray without making too great an addition of new bath at one time. This also applies to the bath when used for cold toning.

This last or cold toning differs only from the hot method in that a much longer time is required, and it is not necessary to keep the prints in motion after they have been introduced and moved around a little to get good distribution of the solution over their surface. In the hot method the prints must be kept moving or uneven results will be obtained. The cold bath method also has the advantage of rarely if ever giving scum or other surface markings that have to be cleaned away. In cold toning the prints may be put in the bath in the morning and removed at the end of the day or they may be started in the evening and removed the next morning.

After one has acquired a little practice in handling the hot bath process, some quite pleasing effects can be obtained by bringing the bath to a degree of heat that will just slightly melt the gelatine of the emulsion carrying the image. This, however, is best suited to subjects in bold masses with deep shadows; but, done with care, so as to secure an even effect, the results have a very pleasing appearance of brilliancy that suggests a rich carbon print. But in ordinary work the bath should not be heated over one hundred and twenty degrees Fahrenheit. If the bath is too hot the prints will not tone, and in the above suggestion as to slightly melting the surface of the emulsion, it is understood that this is to be done by raising the temperature of the bath only after the prints have acquired their desired tone.

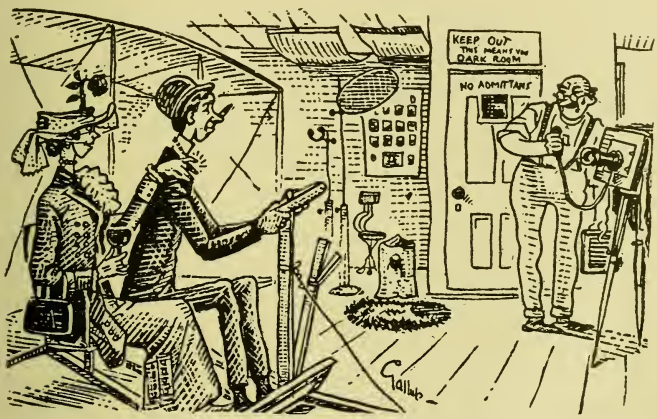
There is really nothing more that I can add except to urge the employment of care in giving the paper the right exposure, and the steady maintenance of the bath at a uniform strength by regular additions of the stock solution, rather than an occasional addition of a large amount. From time to time the old bath will require to be decanted off in order to get rid of the dirt that may settle to the bottom of the bottle or container. Always save the clear portion of the old bath in order that it may furnish the necessary silver for good results. I might, before closing, advise that even with a good bath and properly timed prints, good tones may not result. A hard, glassy negative will produce one sort of sepia tone; a muddy, fogged negative another, while the most pleasing sepia print is only obtainable from a good negative by correct timing of the print and the use of a well-ripened bath.

"Meanwhile, if these hours be dark, as indeed, in many ways they are, at least do not let us sit deedless, like fools and fine gentlemen, thinking the common toil not good enough for us, and beaten by the muddle; but rather let us work like good fellows, trying by some dim candlelight to set our workshop ready against tomorrow's daylight—that tomorrow, when the civilized world, no longer greedy, strifeful, and destructive, shall have a new art, a glorious art, made by the people and for the people, as a happiness to the maker and the user."—William Morris.

Honeymoon Days

By Kin Hubbard

Weddin' couples are beginnin' t' return t' ther ole stampin' grounds—t' th' scenes o' ther engagement days, th' happiest days they'll ever know agin. They are tired an' grimy and disillusioned. Some have bathed in th' crystal waters o' Cedar Point, some have walked solemn-faced thro' th' historic precints o' George Washin'ton's ole home at Mt. Vernon, some have crawled thro' th' mud o'



"THEN COMES TH' PHOTO STUDIO AN' THEY GIT TOOK T'GETHER SETTIN' IN A DUMMY AIRPLANE, TH' GROOM WITH A SE-GAR IN HIS MOUTH AN' HIS HAT TILTED BACK"

Mammoth Cave, some have mingled in th' gayety o' Atlantic City, while some have returned sun-browned from th' croquet grounds of inland resorts.

A hot, sticky weddin' trip in midsummer must be a beautiful experience—all th' way t' Niagary Falls in a yeller day coach, half embedded in egg shells an' spillin' baked beans on th' red plush seats at ever' lurch o' th' train. A groom dressed in a tight fittin' black forced sale suit covered with cinders an' a big brown derby hat that won't hang anywhere an' a high one-ply La Verdad collar an' a unmanageable necktie. An' a bride pinned t'gether in a travelin' suit o' blue serge that turns red on th' shoulder next t' th' window an' a hat o' her own creation. They spend th' first day at th' Falls among th' souvenir pustal booths an' ice cream cone bazars. Then comes th' photo studio an' they git took t'gether settin' in a dummy aeroplane, th' groom with a se-gar in his mouth an' his hat tilted back. Th' bride places her left hand on his shoulder (ring showin') an' in her other hand she clutches a red goblet bearin' th' inscription, "From Cecil t' Myrt, Niagary Falls, 1917." How happy they are!—She can't

see th' Falls fer her new ring, while his breast swells with a feelin' o' security as he notices, hidden between two ones, a five that hasn't been broken.

Long before they strike th' state line on th' return trip th' groom falls int' a meditative state an' begins t' realize fer th' first time that he'll have t' be some contortionist t' make both ends meet on his weekly wage. He begins t' feel that he should have held off fer another year—till he had another suit o' clothes. He wonders if his bride is stocked up on clothes an' if her teeth are plugged. As he enumerates th' extra added features o' married life th' fear that he'll be reduced t' stogies seizes him an th' scenery along th' route loses its charm. Then th' ole happy past looms up—when he boarded at home fer nothin' an' didn' have anything on his mind but his hair an' a little dash o' violet water. How he used t' lean agin th' courthouse fence in th' evenin' an' smoke long, fragrant La Zaras till it wuz dark enough t' set on her verandy among th' sweet smellin' honeysuckles an' talk o' love. How he whistled "Sweet Marie" all th' way home, an' how his dear ole mother's voice called down t' him not t' strike matches on th' hall wall paper. How he crept int' his chamber an' put his tuberose buttonhole bouquet tenderly between th' well thumbed pages o' "Which Loved Him Best." Then he looks at his bride. She is fast asleep an' a half eaten wedge o' custard pie reposes among th' banana peels in her lap. Her little feet are cocked upon ther pasteboard suitcase an' a sweet smile lights up her girlish face. She is dreamin' o' th' future.

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It is just as allowable to investigate a work of art as it is to investigate a plant or an animal. There is no more need of discarding experience in the first case than in the second; the entire process consists in discovering, by numerous comparisons and progressive eliminations, traits common to all works of art, and, at the same time, distinctive traits, by which works of art are separated from other productions of the human intellect.—H. TAINE.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

SPEEDING UP ENLARGING: The lens stop in a Brownie enlarging box is about one-eighth of an inch in diameter. If this is drilled out and enlarged to three sixteenths, the speed will be doubled, and one will save half the time. The definition is positively as good; my own enlargements from anastigmat-lens-made negatives look like contact prints—L. M. R., Minnesota.

DISSOLVING MERCURIC BICHLORIDE: Bichloride of mercury is very hard to dissolve. Just fill your bottle half full of warm water, put in the mercury, shake vigorously, and the chemical will dissolve like sulphide, in about half a minute.—G. P. G., California.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

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How We Can Help

The other day a visitor came in, one of the old-timers who had been a most ardent and enthusiastic amateur some years ago, who surprised me by announcing that he had again taken up camera work with more energy than ever before. The new developers, the different grades of developing paper, and matters of that kind were topics of interest, topics of the utmost importance to him. And all this revived enthusiasm is based on his desire to make his knowledge of photography serve the purpose of gladdening the hearts of the boys already "over there", on their way, or to go later; as well as those at home whose hearts are with them as they go. Our good friend resides in a town that has given most generously of its sons; and, while he has made no effort to lessen the patronage of the local professional, he has made hundreds of negatives and thousands of prints that have all been most acceptable to those to whom they were presented. The camera used is a small one, producing pictures that can be easily sent in a letter or carried in a card case, and these he finds are more acceptable than would be larger or more elaborate prints. And the pictures that his activity in getting about allows him to secure, are such that have a much more vital interest than do the more formal studio productions. What boy in the trenches would not be pleased with a picture of himself amidst his home surroundings, a picture that he could show to the others, as well as enjoy himself? And if it is too late for the making of such a picture, one showing the folks at home is equally effective. And one does not need to go far afield to find opportunities in this direction, and one need not fear that their efforts will not be appreciated, be the recipient of the kindness well able to afford a visit to the studio of the professional or less blessed with worldly goods to the extent of not feeling that this can be done. Our good friend of the camera has become known as the gentleman who wants to make little home pictures for the boys, any and all of them, who are doing their part, and he is loved and respected for his work. It takes up his time, it uses up material, but besides being work done in a good cause, it is interesting and enjoyable, as he never found the practice of photography before. There is an object, a good one; and, best of all, an object that others appreciate and understand. And still better, if I may be pardoned for suggesting so selfish an angle, many of the pictures that his activities encompass are artistic, and did he so desire, would no doubt rank high in any of the exhibitions. We can, practically all of us, do the same to a lesser or greater extent. The work is well worth the doing, the reward more than ample.

And having thus chosen our course without guile and with pure purpose, let us renew our trust in God, and go forward without fear and with manly hearts.—Abraham Lincoln.

Lend a Hand

What greater joy could there be, little children, than to lend a helping hand?

Noble thought! Looking into your bright, shining faces this Sunday morning, I can see that each of you has that thought, and your faces look brighter and shine better for it. A helping hand! By your eager look, Ethel, and by the smile on your face, Roy, I can see that each of you has made up her or his mind to always lend a helping hand.

Larry, stop that! No, you mustn't make remarks about teacher while he is trying to show you the way. That is not lending a helping hand to your teacher. Dear me, no! What's that? "Tie that bull outside!" Larry, I do not understand you.

But just think, little children, how in any walk of life you can lend a helping hand. Think, for instance, of the poor editor.

There's a thought for you—the poor editor! Some of you may grow up to be editors yourself some day and may need a helping hand. Ah! But how much more noble it would be if you should grow up to be contributors and then each of you could lend a helping hand to the poor editor. Do unto others as they would do unto you—and beat them to it!

The poor editor, little children, has a hard life. When you read your CAMERA CRAFT this afternoon, as you will, like good little children, you will observe that several of the articles therein are not as interesting and instructive as you might wish. This happens because there were not enough contributions on hand to permit the poor editor to make a good selection—yes, pick out articles that would just fill the space, dearies, I see you understand me.

Oh, pupils, imagine the helping hand you could lend if you were all contributors! The contributor, you know, writes out helpful suggestions, information gathered from experience, and sends them in, giving the poor editor plenty of material from which to make up the magazine. He makes it possible for him to fill up the magazine—and the poor editor appreciates this so much! Just think of the pleasure afforded him as he labors away, lightening his daily load with gleeful song.

Oh, little children, grow up to be contributors as fast as you can and help the poor editor!

In the plastic mythology of Greece stood revealed the power and the beauty of Zeus, and Apollo, and Athene; in the poetry of the Hebrews was manifest the spirit and the majesty of Jehovah; in the Byzantine and Gothic Cathedrals,—in the pictures of Madonnas and saints and warriors, was expressed the yearning of the Middle Ages and of the Renaissance for that expansion of nature and of human personality, which in another form we find in the lives of St. Francis and of St. Catherine, and in the deeds and characters of chivalry. The great art of those times, as of all times, was the direct expression of what was noblest and deepest in the lives of men and women who were then living and of their aspirations towards the infinite.—RALPH RADCLIFFE-WHITEHEAD.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D., Burlingame, California

Covering Power and Illuminating Power of Lenses

A recent article by Graham M. Nichol, on the covering power of lenses, raises some points with regard to lenses that are certainly not generally understood, though their practical importance is very great, and some of these points are well worth more detailed consideration. The first to demand special attention is the distinction between covering power and illuminating power. The best way to realize this is to take an ordinary 3¼x4¼ rapid rectilinear lens and fix it up temporarily on the front of a large camera, 10x12, if available. First of all, open the lens out to its biggest stop aperture, and secure approximately sharp focus on the screen on any object at a reasonable distance, say twenty feet away. Now remove the focusing screen and look obliquely through the lens. At a certain angle it will be seen that no light is transmitted at all, the two sides of the visible aperture apparently closing together and cutting out all light. Obviously this angle must mark the limits of the largest possible circle of light that the lens can project upon the plate. Next look through the center of the lens. A perfect disk of light is then seen, but as we move the head sideways this contracts to an ellipse. At a certain angle this perfect ellipse changes to an imperfect one, with pointed, instead of rounded ends; in fact, to the shape of the aperture formed by sliding two elliptical openings over one another, but not allowing them to coincide. This change in form is due to the lens mount interfering with the light. Up to this point we simply had an oblique view of a circle, which is an ellipse. We now have an oblique view of parts of two circles which apparently intersect, one being the circular stop aperture and the other the circular lens mount. The angle at which this change takes place is obviously the one limiting the illuminated disk which can be produced by light passing the full unobstructed stop-aperture of the lens, and this circle it is convenient to call the circle of full illumination, while the other may be called the extreme circle of illumination.

Suppose, now, we reduce the stop of the lens. It will be found, on trial, that the circle of full illumination has enlarged, though the extreme circle has not changed. If, however, we change the rapid rectilinear for a lens of unsymmetrical construction, the extreme circle will also change: it will become smaller as the circle of full illumination becomes larger if we use the type of lens called the single landscape. What happens to the extreme circle is, however, of small moment, for in any case the illumination near its boundary is so faint as to be photographically of no value. In fact, it is almost impossible to record its limits.

As the ellipse shown by a circle viewed obliquely is necessarily of smaller area than the circle itself, it follows that at the margin of the circle of full illumination the light is rather less than it is at the center. The diminution is not much, and as the ordinary plate has considerable latitude, it is not beyond its capacity to render this really graduated disk as if it were a uniform one. If, however, we go outside the circle of full illumination the visible aperture is very rapidly and materially cut down by the lens mount, and sooner or later we reach an angle where the production of a uniform disk on the plate is impossible. The limits of this angle depend a good deal on the plate and on the exposure, for a plate with great latitude will permit considerable over-exposure in the center without showing it. Under-exposure on any kind of plate will show a very small uniform disk, but if that plate will permit a considerable increase without spoiling the center of the image, a larger disk of uniformity can be produced. Leaving out the question of plate and exposure makes it difficult, if not impossible, to define the

limits of the angle, but seeing that many plates will permit a doubling of what is really a correct exposure, without showing over-exposure, it is convenient to define the circle of uniform illumination as limited by the angle at which the pointed ellipse representing the lens aperture is half the area of the complete circle seen centrally. This angle is termed the angle of semi-illumination, but it should be understood that the definition is a more or less conventional one, probably not far from the truth in most circumstances, but almost certainly well away from it in others.

An actual test giving varied exposures is the only way of arriving at the true maximum limits, and if we start with a very short exposure such a test will be very interesting and instructive, though somewhat expensive. The facts can be illustrated in cheaper fashion by using bromide paper, but the result will afford no criterion of the effects producible on a well-coated negative plate, as the bromide paper has no latitude at all in comparison. It should be observed that with nearly all large-aperture lenses the circle of full illumination is very small; with many not much bigger than half a crown. The most rapid and highest class anastigmats will produce much the bigger circles, but in practically all cases we use plates that require still bigger circles to cover them, so the practical limits are always outside that of the circle of full illumination and near that of semi-illumination. This circle also enlarges as the stop is reduced, and not uncommonly we are compelled to stop down to get sufficiently uniform illumination over the plate in use.

It will be noticed that in considering this matter of illumination, as it affects the area of a plate, we are almost obliged to bring in the word "cover", for none other seems to serve. The term "covering power" may be used in this connection, but it is best not so to use it, for in lens catalogues usually this expression does not imply the size of the angle or circle that the lens will cover with uniform illumination, but that which it will cover with good definition, a different matter altogether, and one quite unconnected with the other. Unfortunately, this conventional definition is not always observed, and so confusion has arisen. Some very good lenses have very small covering power compared with their power of illuminating a plate uniformly, and this may be no disadvantage, but it would be a somewhat awkward matter for a dealer to explain to a purchaser whose knowledge of lenses was very limited, and the former could hardly be blamed if in such case he used "covering power" to define the circle of good illumination. An example of such a lens is the Petzval Portrait, which, tested on a plane object, will show very small covering power, but on a suitably curved object will show it to a very considerable extent. The fact is we cannot fairly test all lenses for covering power in the same way. The form of the object surface comes in. An anastigmat or rectilinear may, with more justice, be tested on a plane surface, and the former will have little to recommend it if it does not show a fairly larger circle, bigger than the rapid rectilinear can produce in the same conditions and much bigger than that which a Petzval may show. But always the type of lens and the purpose for which it is required must be considered. Just as the size of the circles of full and semi-illumination increase as the stop is reduced, so also should the circle of good definition, if the lens is at all a reasonably good one. The most serviceable lens is one that with a moderately small stop will cover the plate with both even illumination and good definition, and one of the most important differences between good anastigmats and rapid rectilinears is that the former will do this with much the larger stop, the result being that, as a rule, they require only a half or one-third the exposure. This brings me to another of the points referred to by Mr. Nicol. He mentioned several cases in which rapid rectilinears would serve just as well as anastigmats, and several ways in which photographers could waste money on expensive lenses when cheap ones would have done all they required. The fact seems to be that many photographers do not quite understand what is meant by a high degree of correction in a lens, and place a value on it that their requirements do not justify. First of all, we must premise that no lens is perfectly corrected. If we test two lenses, an rapid rectilinear and an anastigmat, at a certain moderately oblique angle, and use a critical test, we shall find astigmatism in both of them. It may be clearly obvious in the first lens

and only just perceptible in the other, but it will exist. Clearly the anastigmat is the better corrected, but still not theoretically perfect. Next test both lenses by exposure on a test subject. The chances are that the aberration is not visible in either. The small defect that our microscopic test revealed is marked by the inherent defects of the photographic process. A minute spreading of the light-effect, or lack of sufficient resolving power in the plate, or perhaps lack of minute detail in the subject, has rendered the lens defects quite invisible, and, therefore negligible. It is then evident that the rapid rectilinear is doing the work quite as well as the photographer can desire, while the anastigmat is merely an instrument of greater precision than he needs. At bigger angles he will find marked differences, while always the anastigmat should be the quicker lens, but if he does not use wide angles or short exposures he can do without the anastigmat quite easily.

Yet another point is that the special advantages of the anastigmat are often arrived at by various means of compromises. A little of the critical definition possible in the center of the field is given up for the sake of getting something more important. It has been said that for fine central definition no lens yet made comes up to the Petzval Portrait, while it is certainly a fact that some good rapid rectilinears will give central definition of a kind that should satisfy the most critical photographer. Somehow or another, when an extremely fine focus is required, even though on only quite a small area in the center of the field, the tendency seems to be to rush for an anastigmat, when all the time a much cheaper lens would do the work just as well and very possibly even better.—C. Welborne Piper in *British Journal of Photography.*

Truth of Tone in Photography

A little consideration will show us that in the case of the great majority of subjects with which the camera has to deal (practically all, except copies) it is perfectly impossible for the photograph to reproduce the light and shade as the eye sees it. We have, at least, the consolation that this is equally impossible in painting or drawing.

Let us consider for a moment some typical case. In a good bright print, the highest light which is possible is the plain white of the paper as seen in the diffused light in which the picture is viewed; while the deepest dark will be the "solid black" given by the printing paper in use, as seen in the same light. To get anything darker than this, we should have to cut off some of the light by which we see the picture; and this would not only darken the shadows, but it would also have the effect of making all the high-lights darker too.

Now, if we are taking an indoor portrait, it is possible our sitter may have some part of her dress at least as light as the white paper of the print; and this may be seen in as strong a light as we should use to look at the print. But at the same time there will be other parts of the dress which are as dark as the darkest parts of the print, but which, owing to the fact that the sitter is solid and not merely a flat plane like a picture, will not only be dark in color, but will also be in actual shadow.

A black object which is in shadow is, of course, very much darker than the same object not in shadow. So that although the lightest parts of the subject may, in this particular case, be no lighter than the lightest tone which we can get in the print, the deepest shadows will be very much darker than anything that can be obtained in the print, so long as this is looked at, as it must be, in a moderately good illumination.

In landscape the problem exists to quite as great an extent, although in a slightly different form. Here we may possibly find that the deepest shadows in the subject are not darker than can be got in the print, although they may be; but, on the other hand, the lights are vastly brighter. If we would cut a hole in the wall on which the picture hangs, so that we could see its brightest part against a background of distant landscape, even on a dull day the high-lights of the print would appear almost black in comparison.

In this respect all the graphic arts are in much the same boat. They cannot give the light and shade in the same strength as they are seen in the actual thing portrayed. What they can do, however, is to reproduce them in the same relative proportions; and this is what is meant when it is said that a picture is true in tone. If in the original we take certain particular tones, say, for example, a part of the sky, a distant tree, a foreground high-light and a foreground shadow, and

we find that these reflect light in the proportion of forty, thirty, twenty-five and ten, to keep our picture true in tone, we must have it so that it reflects light in those proportions. It may be that our highest light can only be one-fifth as bright as in the picture. Then the relative brightness of the image in the four parts referred to must be eight, six, five and two. We shall then have brought each tone down until it is only one-fifth as bright as it was in the original; but as they are still in the same proportion as they were in the original subject, the effect will be kept true.

In writing this, we do not wish to be taken as advocating such truth of tone as in all cases a pictorial necessity. At times the photographer's picture can be improved by having the outline of the subject modified in the reproduction; and if we may depart from a slavish copy in the case of outline, it may well be contended that we are at liberty to do so in the case of gradation. It is possible to imagine cases where an alteration might be an improvement; but except by some form of local handwork it is difficult to see how it is to be altered.

The alteration in gradation which can be obtained by photographic means necessarily extends to all the gradation in the photograph, irrespective of what it may represent. We cannot, photographically, lighten the tones on some foreground high-light without lightening similar tones which represent some distant object; and a general falsification of this kind can very seldom be a pictorial advantage.

True tone rendering entails a two-fold accuracy; we must obtain a correct black and white translation of the color of the subject, and we must get the light and shade in a correct scale. The first is a matter of orthochromatism; the second of exposure, primarily, and, to a lesser degree of development.

How far orthochromatic photography should be practiced is still a matter of opinion. It is easy to say that a perfectly faithful translation such as can be got with a panchromatic plate and a properly adjusted light filter should always be made; but the problem is not so simple as all that. We cannot ignore color contrast, as this would do: and although there are many cases in which the orthochromatic rendering scores, there are many in which the non-orthochromatic one is to be preferred.

We are for the moment more concerned with that branch of the subject which deals with the rendering of the tones of the original, apart from their color; and this turns on the exposure being correct. In fact, correct exposure has been defined, in brief, as the exposure which allows us to obtain a negative in which, in inverse form, the gradations are correct throughout.

In most negatives, unless the error in exposure is extraordinarily large, the gradation is correct in parts; but if there is an error, the gradation can only be true in parts. For instance, if it is under-exposed, it will only be in the lighter parts that the gradation is correct; in the darker parts it will be faulty. In the case of over-exposure, things are just the reverse; it is the darkest parts which are correctly rendered, the lighter parts being wrong. And in each case the defect is of the same character, an insufficient differentiation of the different tones. In the under-exposed negative—as every photographer knows—the darker parts of the subject are all too much alike; he does not get what used to be called "detail in the shadows," a rather misleading term, by the way. In over-exposure, it is the gradations in the high-lights which have closed up.

These are faults, it should be remembered, which cannot be remedied in development. We may fog an under-exposed plate in some way, and so get a negative which superficially looks something like a correctly exposed one, but the print from it will show at once that it is not. The gradations in the darker parts will still be wanting. In similar fashion we may hold back an over-exposed plate with bromide, until it looks only a very little more opaque than one that has been correctly exposed; but the high-lights will not be sufficiently differentiated, and in the print will look "bunged up". Hence we can realize the supreme importance of correct exposure in tone rendering.

The part played by development in the rendering of tones has reference to what is known as the "key" of the picture: and also to the adjustment of the negative to the printing process that is to be used with it.

For example, if we have a negative which is correctly exposed, and we develop it slightly, we get a soft result, which is suit-

able for enlarging and for printing on the slower gaslight papers, both processes which tend to give contrast in a print. If we develop it a little more, it will be suitable for contact printing on rapid bromide paper, or on printing-out paper, or platinum; while if we develop it still further we shall get a result which will only be suitable for printing by the carbon process.

The development does not alter the density ratios, but only the scale. Thus if we have a negative which, lightly developed, gives us densities which may be represented as two, four and ten, and we develop it a little further we may get three, six and fifteen; a little further still might give us four, eight and twenty, and so on. If those figures are examined it will be seen that in each case the relationship which they bear to one another is the same. The final figure in each case is five times the first, and the intermediate one is twice the first and two-fifths of the last. Only if we could vary these relationships could we alter the tone values; and experiment has shown that this is not to be done by any of the usually practiced variations in development.

This shows the supreme importance of getting the exposure right, if we are to have the tone values right also. It shows, likewise, that whether we print in a high key or in a low key, or on the other hand, in such a way as to utilize the whole capacity of the printing paper we are employing, it cannot be said that the tones are incorrect or untrue. Some workers, the majority, in fact, like to get what is called a "plucky" print; that is to say, one in which the deepest tones of all are almost as dark as the paper will give, while the highest lights are almost white. They must not be absolutely the one or the other, or the tones will no longer be quite true; but the difference may be so slight as to be inappreciable unless the plain white or full black is present in the margin, to reveal the difference by its contrast. With correct exposure and development this gives a fine bold result. But it is neither more nor less correct, than a print in which the negative has been developed less and printed more lightly, so as to give a delicate result, with pearly grays even for the deepest shadows.

These are matters for the personal taste of the photographer; but in whichever way they are manifested there is still the necessity, if the result is to look right, that the tones—that is to say, the relationship of the different lights and shades to each other, shall be true.—L. H. Fuller in *Photography*.

Viewing Pictures Monocularly

If a photographic picture, say of an open landscape, having some well defined foreground interest, with nice modeling and gradation, plus well rendered planes in their correct tone values, is viewed under a good even illumination with one eye only, a remarkable stereoscopic effect will be observed. Objects in the immediate foreground literally spring out in bold, clear-cut relief against the middle distance, whilst the far distances recede softly away to the horizon. At the same time the various component parts of the picture take on form and "roundness", as if one was actually looking at the scene depicted. This phenomenon is undoubtedly explained by the fact that the ordinary camera is a monocular instrument, the plate recording exactly what the lens sees with its solitary eye.

A most interesting and instructive evening can be spent in looking through a volume of the *Amateur Photographer,* or two or three "Photograms", and testing every picture, whatever the subject happens to be, by the simple method indicated. For instance, the picture entitled, "Ruins, yet Beauteous in Decay", by H. E. Philpot, which appeared recently, and carefully observe this reproduction in the manner suggested; note how the dark yew tree comes out in front of the buildings, and how the distance beyond the arches goes back.

The difference in the appearance of the picture when viewed with both eyes, and when looked at steadily with one eye only is really astonishing, and suggests that all pictorial representations produced by photographic means might well be observed and judged in this way in order to test their stereoscopic qualities, etc. At any rate, pictorial workers would do wisely to critically examine their own pictures under these conditions, and in the event of their not coming up to the standard in this direction, to endeavor to ascertain wherein lies the cause; whether one's apparatus is at fault, or alternatively, whether the worker is himself culpable by reason of: incorrectly judged exposure, with the resulting falsification of tone values, destroying all suggestion of at-

mosphere or aerial perspective; badly arranged lighting of subject; but much less likely, careless focusing, or some other mistake or failing in one or another of the technical operations employed in producing the picture.—F. H. B. Smith in *Amateur Photographer.*

High Temperature Development of Roll Film, Film Packs, Plates and Paper

Communication No. 62 from the Research Laboratory of the Eastman Kodak Company, is devoted to the above subject and the following, the closing summary, will no doubt interest.

Roll film, film packs and plates, whether new or date-expired, may be successfully developed under tropical conditions, up to ninety-five degrees Fahrenheit, by means of most developers, with the addition of ten per cent sodium sulphate and some potassium bromide in order to prevent fog, but much better with a special developer compounded with paramidophenol hydrochloride. Although it has been recommended to develop film in the tropics by hardening the same either before or after development by the addition of a hardener such as formaline, it is only possible to secure the best results by using a developer free from such additional agents. The formula for the developer is as follows:

Paramidophenol hydrochloride	60 grains
Sodium sulphite (E. K. Co.)	440 grains
Sodium carbonate (E. K. Co.)	440 grains
Water to	20 ounces

Rinse for only one or two seconds before placing in the fixing-bath, otherwise the film is apt to soften in the rinse water.

The time of development with Eastman N. C. film at ninety-five degrees Fahrenheit for normal contrast is one and a half minutes, though the time of development may be doubled by the addition of one hundred grains of sodium sulphate (crystals) per liter of developer.

At temperatures up to seventy-five degrees Fahrenheit the regular acid fixing bath should be used, but at temperatures up to eighty-five degrees Fahrenheit the following chrome alum bath is necessary:

Hypo	7 ounces
Sodium sulphite (E. K. Co.)	655 grains
Potassium chrome alum	1310 grains
Acetic acid (glacial)	40 minims
Water to	32 ounces

Dissolve the sulphite and chrome alum together and add to the hypo solution, finally adding the acetic acid.

At temperatures up to ninety-five degrees Fahrenheit, the following formaline bath should be employed:

Hypo	9 ounces
Sodium sulphite (E. K. Co.)	830 grains
Formaline (formaldehyde 40 p. c.)	4¼ ounces
Water to	32 ounces

First dissolve the hypo, then the sulphite, and finally add the formaline.

In order to eliminate the odor of the formaline, the bath should be enclosed in a covered tank as far as possible. The above baths keep well at the temperatures stated, so that for the professional and amateur finishing trade the special chrome alum bath is very suitable, while in special cases, such as expeditionary work, when very high temperatures may prevail, the formaline bath will give perfect results.

Film packs may be successfully treated in a tray in the same way as N. C. film, though so far it has not been possible to devise a method for using the Kodak film or film pack tanks at the temperatures named.

Although no difficulty is to be expected when developing gaslight and bromide papers at high temperatures, the use of a stopbath of three per cent acetic acid, and twice the usual amount of liquid hardener in the fixing bath is recommended.

In conclusion, the author wishes to express his appreciation for the assistance rendered by Mr. H. Cohan and Mr. S. Tulpan during the course of the investigation.—J. I. Crabtree.

The Influence of Illumination on Color in Autochromes

Every autochrome worker soon learns that a good powerful illumination during the exposure conduces to the richest color results. Nor is he long in finding out that it is better to choose for his work what a monochrome worker would call a flat lighting. Perfectly successful work can be done with the sun behind the camera. One reason for this is that the differences of color give that necessary variety, which in an ordinary photograph is supplied by differences of light and shade.

But a more powerful reason for avoiding deep masses of shade when taking color pho-

tographs is that they are both darker and duller in the resulting picture than they were in the original, if development is stopped just when the high-lights are fully brought out. This lack of brightness and color in the shadows makes the lighter parts too prominent. This comparative dullness of the shadows in subjects that are strongly lit is due mainly to a lack of latitude in color plates, but to a less degree to other phenomena which need not now be considered.

There is an apparent want of color in pictures taken on dull days when the illumination is perfectly even; and for this, want of latitude in the plate does not account. Experience shows that a decidedly more brilliant color record can be obtained from a brightly illuminated subject than from the same subject under a comparatively poor light: although in the second instance the plate may have received just as full an exposure. This has been attributed to some peculiarity of the plate; but my purpose is to show that it is due very largely to an altogether different cause.

Anyone who sees aniline dyes in bulk for the first time is almost sure to be surprised to find that many of the dyes in the solid form appear nearly or altogether without color. They look quite black, but on being dissolved and spread out on paper exhibit a most intense coloration. A more familiar example is in the cakes or pans of water color used by painters. Mauve, for instance, in a wash of the proper depth, is an extremely powerful pigment; but in the pan it is so dark that it would be difficult for one to tell at a little distance what its true color really is. On the other hand, some pigments, such as vermillion and a number of the yellows, appear just about the same in the lump as they do applied to the paper. The question is, What causes the difference?

The answer is that the black-looking pigments do not of themselves reflect light appreciably; they show up only by light which passes through them. If they are spread thinly on white paper, the light goes through the layer of color to the paper, is reflected, and penetrates again through the color to the outside; and in this double passage all the colors except that one transmitted by the particular pigment are filtered out; so that the emerging light, and therefore the pigment, appears brightly colored. On the other hand, if the pigment is in bulk, or if it covers the paper to too great a depth, very little of the light that strikes it comes back; nearly all is absorbed, and so, naturally, the substance appears without color, or black. But those colors which appear of their natural tint, regardless of what quantity may be aggregated together, reflect light of themselves without additional help. Their molecular structure is such that they send back light of a certain refrangibility, and absorb all the rest, and hence appear of a definite hue. For this reason, there is no necessity for them to be spread out on a reflecting surface in order to show their hue: they are, in fact, often quite opaque, so that light penetrates them only to a very small distance indeed.

All of this has a direct bearing on our subject, because both of these classes of pigments are found in nature. The coloring matter of living things is generally of the first—transparent — variety; whereas in the case of most minerals it is of the second, or opaque, kind. Plants, for instance, have green chlorophyll in their leaves; and the earth and many rocks are stained red by salts of iron. In nature, however, we rarely find pigments spread over an intensely white reflective surface, as the colors are spread over paper by a painter. They are diffused throughout the substance which they color—a substance that is only imperfectly reflective in any of its parts. Hence the light that is reflected from them comes from various depths within the living structure—some from near the surface, some from further in the interior of the leaf stem, or what not, that is reflecting the light.

Observe the conditions closely. That light which comes from the surface of the object will be less saturated with color than the part which comes from the interior, since it will have passed through a lesser thickness or quantity of pigment. So, then, on a dull day, when the light is of sufficient strength to penetrate only a minimum distance into the object, it emerges with a smaller burden of color than on days when the light is bright, when it penetrates deep down into the partly reflecting substance, traverses a thick layer of coloring matter, and comes out more completely charged with color. Even the comparatively opaque coloring substances, since they are not quite opaque, behave to some extent in the same way.

On bright days, therefore, the colors that

usually occur in nature are not only more intense or brilliant, but are also, as a rule, actually more pure or saturated than on dull days. We notice the one without perceiving the other. We see the livening of the landscape under an increasing sun; but unconsciously attribute it altogether to the augmented light, forgetting the role that color plays in causing the transformation. We do not separate the qualities of light and color in judging the well-lit scene or the one under an overcast sky: but the color-plate records these colors closely as they are; proper exposure eliminates the difference of brightness that existed in the originals; the two plates in consequence show marked differences of color, in spite of the fact that they are equally transparent.

It is probable that the reason this explanation does not occur at once, or that we are reluctant to accept it, is that we do not ordinarily see two widely distinct aspects of nature in juxtaposition, as they are presented by two such color photographs. We see them at different times, and memory does not serve us well enough to lead us to the truth. Alterations of lighting take place so gradually in the processes of nature that the changes of color that go with them easily escape us.

There are, however, certain times when we do notice these changes of color. This happens especially when a rather abrupt difference of lighting occurs. For instance, if one observes a landscape partly obscured by the shadow that falls from a cloud, one will notice that the difference in the actual amount of color perceivable in the shaded and sunlit area is very considerable. One may often remark a similar effect in a room as it is suddenly lighted up by the passage of a cloud from over the face of the sun. Dark furniture and picture frames, which were previously of a gloomy monotone, now show beautiful variations of tint in their grain, and the color of rugs, books, etc., comes out vividly.

Both reflection and observation, therefore, go to show that the disparaty in the purity of colors noticeable in color photographs of the same subject taken in widely different intensities of light represents pretty nearly what is actually the fact, and is due to no inherent or obscure fault in the plate at all.

It follows that there are certain cases in which any reasonable difference in illumination does not result in any defect of color rendering whatever. A brightly colored painting, for instance, should photograph well in almost any light. So also should any object which light, be it never so dull, completely penetrates; such as colors in solution, or, using an example nearer to nature, the petals of most flowers, certain leaves, etc. These should photograph equally well when poorly as when brightly illuminated. One of the very best flower pictures the writer secured was taken indoors in the early spring, with a heavy, overcast sky. The exposure was five minutes at f-8, but the colors of the resulting picture were all that could be desired.

On the other hand, it is also apparent that certain dark, dull colored objects demand all the light that one can get on them, because their true glow of color does not appear by mere surface reflection. The light must be made to penetrate into them to bring their latent color to the surface.

These facts should serve as a guide when making exposures under uncertain lighting conditions; and, of course, as in all questions where design or composition enter, the correct procedure will be determined very largely by what is paramount in the picture. —Noel Deisch in *Photography*.

Illinois College of Photography

President Bissell visited Washington, D. C., recently in the interest of the Government Photographic Service.

R. K. Wilmarth of Wisconsin, class of 1915, writes that he is somewhere in England and expects soon to be in France assisting in the greatest fight for liberty of the ages.

Hermon Fichweiler, Jr., class of 1913, was a welcome visitor at the College recently. His new uniform with the badge of promotion to master engineer is especially becoming. Mr. Fichweiler was enjoying a short furlough before leaving for France.

J. B. Whitcraft, class of 1915, and George Hunt, class of 1917, have entered the service and are in attendance at the Aerial School at Rochester, New York. Upon entering the school, Messrs. Whitcraft and Hunt were rapidly promoted upon their credit marks from the College.

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Photographing Furniture

A furniture dealer in one of our interior cities conceived the idea of having photographs made of a good portion of his stock in order that he might be prepared to interest possible buyers in the surrounding towns without compelling a visit to his store until the actual making of the sale was in progress. He reasoned that if the mail-order houses could sell by catalogue illustrations he should be able to do the same with some good photographs. The photographer was called in, some negatives were made,—but the results were a sad disappointment. I saw one of them and can vouch for their poor quality. Mr. Dealer was in the city, called, and explained that he wanted to get in touch with someone here in San Francisco who could do the work properly. As it happened, the photographer had already written me complaining of his lack of success and asking for help. So I explained to Mr. Dealer that the trouble was, no doubt, due to his local man not having the proper equipment for this special work through never having had any of it to do, but a second attempt would result better. I had the photographer's city dealer send him a second-hand series V Bausch & Lomb Protar of good long focus for his 6½x8½ plate, one that was cheap, because working at f-18, together with a Wratten K3 filter. That happened about six weeks ago. A few days ago Mr. Dealer was in again and showed me some of the best examples of furniture photographs that I had ever seen, and they were made by the same photographer who had made the first unsatisfactory ones.

These first were made with a lens of too short focus, giving violent perspective, and failing to use a filter had increased to apparent ill effect of uneven lighting. As the photographer explained to me, he had failed to realize that with such subjects a small stop had to be used and there was therefore no need of buying a high-priced, because fast, anastigmat. With the excellent one working at f-18 he could afford one of long focus, as it cost no more than a fast one of about half the focal length, and second-hand cost even less. The filter question he has worked out from the instructions given and now uses several of the Wratten set, the G, or strong yellow mainly, the A or red for dark woods, with one of the lighter K filters for furniture with tapestry. A little thought and study, based on the first crude results, has greatly improved the lighting, and, of course, he has learned that full exposure and careful development was required.

Obsolete Diaphragm Markings

Almost everybody is familiar with the well known f- and U. S. systems of numbering lens diaphragms, but occasionally a different series of markings are encountered on an old lens, and these are quite a puzzle until understood. In 1889 the Royal Photographic Society adopted a system in which f-10, designated as No. 1, was the standard, and the other stops were numbered to show their relative required exposures. Stop No. 2 required double the exposure, being actually f-14, No. 4 required four times, and the stops larger than f-10 or No. 1 were marked ½, ¼ and so on, indicating one-half, one-fourth and other fractional parts of the exposure required by the standard stop or the one marked No. 1. Dallmeyer at one time used a system in which the square root of f-10 or f3.16 was used as the standard, and the other stops numbered to indicate doubling of the exposure. No. 2 by this system becomes f-4.7, No. 4 f-6.32, and so on. Goerz and Voigtlander used a similar system, except that their stop numbers, while showing the

number of times required as compared to the f-3.16 stop, they did not follow the Dallmeyer ratio. Still another system, introduced by Zeiss, took f-100 as the standard or No. 1; No. 2 requiring one-half the exposure, was really f-71, No. 4, requiring one-fourth the exposure being f-50, and so on. Later Messrs. Zeiss adopted f-50 as the standard, marking it No. 1, and the others accordingly. This system can be easily identified by the fact that the smallest stops have the smallest numbers. Various other manufacturers and dealers adopted one or the other of these systems, and therefore lenses bearing other names than these mentioned may be found carrying one of these several systems of diaphragm markings. In addition, not a few lenses have been turned out in the past with stops simply numbered in rotation, generally beginning with the largest one, but having no particular relationship to each other as to the "times of exposure" required.

Exposures In Enlarging

Despite the fact that correct exposure in bromide enlarging, just as in negative making, is of paramount importance, it is highly probable that not half of the bromide enlargements turned out by the average worker have been properly timed. And not being rightly timed they are not as good prints as they might otherwise be. In one case that came under my notice some time ago the worker was timing all his exposures entirely too long in order to make them fit a developer that he had altered and changed about, trying to make it fit some previous wrong exposure until it was quite unsuited to the work. The exposing of a test strip takes but a few minutes and where the least doubt exists one should always resort to such a trial. It is not at all necessary to fully develop the strip or even pour the developer out into the tray. Simply pin up the strip so that it passes across an average portion of the subject, then hold a card to cover two-thirds of it for part of a determined exposure, say one-third, then lower it to cover only one-third, while the exposure continues, finally exposing the whole for the remaining one-third of the time. Say the estimated proper exposure be twelve seconds; the three exposures given should be for a period of six seconds each. This would result in the upper end of the strip having a total exposure of eighteen seconds, the center portion twelve and the lower end six. The strip immersed in the graduate for a minute or two will show, by the speed with which it develops, which of the three exposures are right, or the nearest so. This takes much less time to do than it does to tell.

White Carbon Tissue

An Ohio correspondent writes to ask if there is any such thing as a print in white on a dark surface instead of the usual thing, a print in black or some dark color on a white ground. There certainly is. Some years ago we saw some very fine effects of this kind in which the lights were produced by the carbon process, the darks of the picture being the natural grain of some very finely polished dark wood on which the white print had been mounted. This white carbon tissue is produced regularly by the Autotype Company, and sold in this country by George Murphy, Incorporated, of New York. One must, of course, print from a positive instead of a negative; but the positive is easily made and making it through the camera enables one to secure any size of print that he may desire, by making it of the proper size for printing by contact. Strange as it may seem, there is no tendency to bichromate staining, and the one using the tissue for the first time will be surprised at its rapidity and at the clearness of the printed image produced by the darkening of the bichromate in the white pigmented gelatine of the tissue. And while we have never had the pleasure of seeing any, we have heard of very fine results having been secured by combining a weak print on this white tissue with a print on regular colored tissue transferred on a toned support. Carbon prints on a somewhat dark support are frequently quite effective, except for the general dullness that they have, but by using another print in this white carbon in combination therewith, one can, it would seem, secure the same effect that the crayon artist does by picking out his high-lights on his deep toned papers with white chalk.

INTERNATIONAL PHOTOGRAPHIC ASSOCIATION

I. P. A. Lantern Slide Interchange

The Eastern Division of the I. P. A. Lantern Slide Interchange has recently enrolled a number of new members. The first set was sent out several weeks ago, and each member who has seen it has expressed his appreciation. The slides are very interesting and of good quality. The Director hopes that those members who have not yet been afforded an opportunity of seeing slides will have patience. They will realize that it takes time to organize an activity of this kind. Another set will be sent out very shortly, and when several sets are in circulation, most of the delay that is now being experienced will be alleviated.

Any worker who is interested in lantern slide making is cordially invited to join the interchange. The director, Arthur H. Farrow, 51 Richelieu Terace, Newark, New Jersey, will gladly send full particulars.

Officers of the I. P. A.

F. B. Hinman, President, 1369 South Washington St., Denver, Colo.

J. H. Winchell, Chief Album Director, R. F. D. No. 2, Painesville, Ohio.

Fayette J. Clute, General Secretary, 413-415 Claus Spreckels Building, San Francisco.

Answers to inquiries concerning membership and membership blanks will be supplied by the State secretaries. Album directors are at present acting as State secretaries in such of their respective States as have as yet no secretaries.

John Bieseman, Director Post Card Division, Hemlock, Ohio.

James B. Warner, Director Stereoscopic Division, 413-415 Claus Spreckels Building, San Francisco.

NOTE.—All stereoscopic slides sent to Director for the circulating sets must be mounted, titled, and show the maker's name and I. P. A. number on the back of mount. Notify the Director how many mounts can be used, and a supply will be sent you by return mail.

A. E. Davies, Director Lantern Slide Division, 1327 Grove St., Berkeley, California.

Arthur H. Farrow, Secretary Lantern Slide Division, 51 Richelieu Terrace, Newark, N. J.

STATE SECRETARIES

California—A. E. Davies, 1327 Grove St., Berkeley.

Idaho—Eugene Clifford, 902 9th Avenue, Lewiston.

Iowa—Harry B. Nolte, Algona.

Kansas—H. H. Gill, Hays City.

Mississippi—George W. Askew, Jr., 211 34th Ave., Meridian.

Missouri—J. F. Peters, Room 210 Union Station, St. Louis.

New York—Louis R. Murray, 21 Clark St., Ogdensburg.

Oregon—F. L. Derby, La Fayette.

Texas—Emmett L. Lovett, care Southern Electric Company of Texas, Wichita Falls.

Wisconsin—F. W. Freitag, 500 Monument Square, Racine.

FOREIGN SECRETARIES.

French—Charles A. Wargny, 247 Torrence St., Punxsutawney, Pa., U. S. A.

German — George N. Baumiller, Nutwood, Ohio.

MEXICO

Vice-President—Jose Ramos, Zitacuaro, Michoacan, Mexico.

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Album Director—R. W. Franklin, Dodsland, Sask., Canada.

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Minnesota—Leonard A. Williams, St. Cloud.

Mississippi—George W. Askew, Jr., 211 34th Ave., Meridian.

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New Jersey—Arthur H. Farrow, 51 Richelieu Terrace, Newark.

New York—Charles F. Rice, P. O. Box 517, Mamaroneck.

North Dakota—Jas. A. Van Kleeck, 619 Second Ave., North Fargo.

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South Dakota — C. B. Bolles, L. B. 351, Aberdeen.

Texas—J. B. Oheim, P. O. Drawer M, Henrietta.

Utah—John C. Swenson, A. B., Provo.

West Virginia—William E. Monroe, Box 298, Point Pleasant.

NEW MEMBERS

4487—P. O'Toibin, P. O. Box No. 98, Pernambuco, Brazil, S. A.

4½x6cm., 4x5, post card and 5x7, various papers, of tropical landscapes and children (nudes); for California landscapes and children (nudes). Class 1.

4488—Walter L. Saunders, 215 Church St., South Williamsport, Pa.
Class 2.

4489—A. L. Gates, Cawker City, Kans.
5x7 and smaller, various papers, of landscapes and general views; for landscapes, parks and natural scenery. Class 1.

4490—J. Thornton, R. R. No. 2, Keene, Ont., Canada.
Class 2.

4491—Sr. Juan E. Decker, P. O. Box 44, Rio Grande City, Texas.

Vest pocket up to post card sizes, various papers, of typical border scenes, landscapes, genre studies and animal pictures; for anything good and artistic. Desire only prints in single and double weight papers.
Class 1.

4492—Lorimer Courtney, 2 Hobson Avenue, Worcester, Mass.

2½x4¼, various papers, of landscapes, animals, birds, and miscellaneous; for anything of general interest. Class 1.

4493—Kenneth R. Albron, Maycot, Alexander Road, Epsom, Surrey, England.
Class 3.

RENEWALS

1980—Ansel Kisner, 306 Blaine St., Fairmont, W. Va.
Class 2.

2212—A. J. Soares, Route No. 1, Box 23, Hayward, Cal.

3¼x5½ to 6½x8½, developing papers, of wild flowers, many varieties, birds' nests and birds; for the same, especially photos of wild flowers of the Pacific Slope. Desire also correspondence with those interested in wild flowers and birds. Only good work sent and accepted. Class 1.

2498—Dr. B. B. Sprout, Room 216, First National Bank Bldg., Williamsport, Pa.
2¼x3¼, 3¼x5½, 4¼x6½ and enlargements to 6½x8½, of miscellaneous subjects and some speed work; for the same. Class 1.

3908—S. J. Anderson, Box 32, Bellaire, Ohio.
3¼x5½, 5x7, developing papers of figure studies, Niagara Falls, Cuban views, lake views and historical views; wish to hear from the Hawaiian members. Do good work and want the same. Class 1.

CHANGES OF ADDRESS

2025—Rev. V. A. Wood, Cranford, N. J.
(Was Hackensack, N. J.)

4256—J. A. Currie, 1925 G St., N. W., Washington, D. C.
(Was Oakland, Cal.)

4416—R. C. Posey, Fairfield, Ala.
(Was Tuscumbia, Ala.)

4450—F. P. Fox, care General Delivery, Bismarck, N. D.
(Was Ambrose, N. D.)

4457—Glenn L. Gebhardt, 532 Sherman Ave., Canon City, Colo.
(Was Carbondale, Colo.)

4472—Harry E. Carpenter, South Benson Road, Fairfield, Conn.
(Erroneously printed in April issue as South Bend Road.)

4480—Louis Jay Gerson, Palisades, N. Y.
(Was erroneously printed in May issue as Louis J. Gersal, New York.)

WITHDRAWAL

4343—S. H. Shelsted, Brandt, S. D.
For lack of time.

CLUB NEWS AND NOTES

Club Secretaries and others will oblige by sending us reports for this Department

California Camera Club

At the annual election of officers for the ensuing year, W. C. Mackintosh, who has been the presiding officer for the past two years, was again unanimously elected president.

The drive for new members to replace those who have entered the service and gone "Over There", is still in progress with gratifying results. Many old timers have returned, some of whom have stepped into the harness and gone to work, as if they never had been away. The drive will continue until the end of June, the payment of an initiation fee being suspended until that time.

The regular monthly outing was held Sunday, May nineteenth. Again Marin County was the scene of action; Rock Springs and the vicinity of Mill Valley being the place. As usual there was a large and enthusiastic attendance.

The varied and attractive collection of pictures by Harold D. Corsey will remain on exhibition in the club rooms until the end of May. They will be followed by the work of Louis Fleckenstein of Los Angeles, an exhibit that will be well worth seeing.

An interesting and instructive demonstration on the intensification of negatives, and the production of green and blue tones on prints, was give by C. R. Danielson in the club rooms one evening the latter part of the month.

Judging from the personnel of the committees just appointed by the newly elected president, the Club has before it a year of interesting and instructive events.

Chicago Camera Club

The exhibit by the Chicago Camera Club gives, as perhaps nothing else could, a remarkable resume of the startling progress the craftsmen of this modern art have made. Commerce, industry, and finance are remarkably bound together in the interesting group by Charles N. Bowen. He has, besides these more technical scenes, a beautiful photograph of a little girl which he calls "Easter". "Beside Still Waters", by Gordon C. Abbott, is lovely. "Night", by Otto W. Bahl, is filled with dim romance flitting on swift feet through the shadows of the trees. "The Temple", by H. F. Rich, is exquisite. Robert Sansone has a beautiful picture in "The Diana of the Dunes". Another lovely landscape is "My Illinois", by N. A. Fleischer. "Sunset Haven" and "An Early Start", by Paul Wierum, set the true fisherman's pulses throbbing, and "Gray December", by W. F. Wienecke, is charming.

Probably the most striking picture in the exhibition is the one by George H. High, called "Sphinx". "Doing Their Bit" is an attractive picture, too. "The Bookworm", by Leroy T. Goble, is a more serious minded youth; E. J. Sturtz has a group of beautiful landscapes, and Leonard Westphalen has three charming photographs, one "Autumn Afternoon", of Japanese effect.—*Chicago Tribune.*

The Pittsburgh Salon

The executive committee of the Pittsburgh Salon, as is customary, announces the election of its new contributing members, selected from among those who were represented in the hanging at the Salon this year, whose work has been of such standard of individuality and character as to make possible their receiving this distinction. Those selected are as follows: Fred R. Archer and Louis Fleckenstein, Los Angeles; C. E. Beeson, Pittsburgh; Alice Boughton, New York City; Emily H. Hayden, Catonsville, Maryland; G. Buell and Hebe Hollister, Corning, New York; Charles L. Peck, Buffalo; Remick H. Neeson and John H. Stockdale, Baltimore; Jane Reece, Dayton, Ohio, and William S. Richter, Philadelphia. This makes eleven members in California, only one of which failed to send work for the last Salon.

OUR BOOK SHELVES

"Orchard and Garden"

This is a new book just off the press, the work of Benjamin W. Douglass, a gentleman who many of our readers will remember as the contributor of a number of valuable articles to our pages. Mr. Douglass was formerly state entomologist of Indiana, and his vast store of garden and orchard knowledge, combined with his exceptional skill as a photographer, is assurance that what he may offer on the subject covered by this book is of more than usual value. Mr. Douglass goes quite deeply into every branch of orchard and garden work, and the wealth of illustrations that the book presents adds greatly to the thoroughness of the instructions given. All in all the book is a most charming and informative one, and as quite a section is devoted to flowers and shrubs, the requirements of the reader seem to be met in as full a manner as could be wished. As a book, the volume is handsomely printed on the best of paper and bound in neat cloth in a most substantial manner. Published by the Federal Publishing Company, Indianapolis, Indiana. Price one dollar and fifty cents.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

It happened April 1st. Constance Luce of Gonzales to J. C. Vassar of Paso Robles, is the way it was announced. The bride received a seven-passenger Buick for a wedding present.

Visitors from Santa Clara Valley recently were Mr. and Mrs. Crandall and J. C. Franklin, Palo Alto; G. C. Hulse and M. Lyne, San Jose.

R. L. Reid, formerly of Berkeley, has bought out Farrington & Rodger, druggists, Santa Cruz.

W. H. Sherer of Santa Cruz, and O. Hageman of Watsonville are both very busy with school work.

Mr. and Mrs. C. C. Green and two boys of Salinas took a Sunday off recently and motored to Carmel-by-the-Sea.

Miss Ethel Lyons now has charge of the photographic department of Bullock's, Los Angeles. She is ably assisted by Miss Helen Schwartz.

H. A. Parker of Pasadena received a very handsome present April twenty-seventh,—a baby girl.

Miss Wallace still holds forth at the Sun Drug Company's, Los Angeles.

C. C. Lord and wife were in San Francisco when the writer called on them at their store in Long Beach.

Hallie Cody, formerly with Shirley Bacon of Long Beach, is now with Earl V. Lewis of Los Angeles, in the finishing department.

Shirley Bacon is as active and as young looking as ever.

Fred Twogood of Riverside, motored into Los Angeles to see the writer while there.

Fred Lindroth of Modesto has sold his place to Scott G. Snowden.

J. E. Stromberg of San Diego has temporarily retired from business.

Mrs. D. D. Barber has purchased the studio of Evan Davis of Brawley. Mr. Davis will devote his entire attention to his El Centro studio.

W. Scott, formerly of Brawley, has opened a studio at San Pedro.

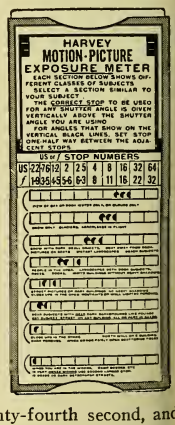
Frank Aston has reopened the studio at San Luis Obispo formerly conducted by Miss Elsie Polin.

W. L. Jacobs of Verde, Arizona, has opened a new studio. He does the commercial business of the Verde Valley.

W. R. Mitchel of Los Angeles, and Fred Hartsook of Los Angeles and San Francisco, have both opened branches at Camp Kearny. The latter has also opened a branch at San Diego.

An Exposure Meter For Motion Picture Work

The manufacturers of the well known and justly popular Harvey Exposure Meter have sent us one of their new Harvey Motion Exposure Meters, a cut of which is shown herewith. The one important feature, and it is indeed a new and important one, possessed by this meter alone, is that the meter itself takes care of the varying exposures due to variations in cranking speed. With the shutter half open and a cranking speed of two turns per second, the exposure is one thirty - second; with the cranking speed changed to one and one-half turns per second, the exposure becomes one twenty-fourth second, and so on with other settings of the shutter. With any other form of meter, these figures must be remembered and employed, but with this new meter one reads off at a glance the correct exposure for any shutter setting. Other features suggested by the actual use of the regular Harvey Meter by



moving picture operators, have been incorporated in this new meter, with the result that the greatly increased simplification has been added to the accuracy and effectiveness that caused the original meter to achieve its popularity in even the specialized field of motion picture work. The new Harvey Motion Picture Exposure Meter is a marvel of convenience and efficiency and cannot help but achieve a universal popularity with the motion picture camera men. It is manufactured by G. L. Harvey, 105 South Dearborn Street, Chicago, Illinois, and can be purchased from or ordered through any dealer in photographic supplies; price two dollars and fifty cents.

Mr. Lion With Henry de Roos

Enno Lion, well and favorably known to the trade of this section through his connection with the Simplex Photo Products Company during the Exposition, has accepted a position with Henry G. de Roos, the popular Third Street dealer in photographic supplies. Mr. Lion brings to his work a wide knowledge of photography and particularly of camera, lens and shutter capabilities, and this in turn is placed at the disposal of those with whom he comes in contact in the regular course of business at this busy store. In addition, Mr. Lion seems to possess an inexhaustible fund of patience and a naturally pleasing personality that must make him a most decided favorite with those dealing with him. Mr. de Roos is to be congratulated upon securing his services as an addition to his present most popular force.

Where To Find Information

Owing to the enormous increase of Government war work, the Governmental departments at Washington are being flooded with letters of inquiry on every conceivable subject concerning the war, and it has been found a physical impossibility for the clerks, though they number an army in themselves now, to give many of these letters proper attention and reply. There is published daily at Washington, under authority of and by direction of the President, a Government newspaper, *The Official Bulletin*. This newspaper prints every day all of the more important rulings, decisions, regulations, proclamations, orders, etc., as they are promulgated by the several departments and the many special committees and agencies now in operation at the National Capital. This official journal is posted daily in every post-office in the United States, more than fifty-six thousand in number, and may also be found on file at all libraries, boards of trade and chambers of commerce, the offices of mayors, governors, and other Federal officials. By consulting these files most questions will be found readily answered; there will be little necessity for letter writing; the unnecessary congestion of the mails will be appreciably relieved; the railroads will be called upon to move fewer correspondence sacks, and the mass of business that is piling up in the Government departments will be eased considerably. Hundreds of clerks, now answering correspondence, will be enabled to give their time to essentially important work, and a mass of business will be done, and at the same time, a fundamentally patriotic service will have been performed by the public.

Those New Lens Prices

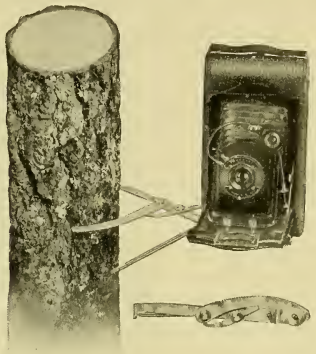
I was in a stockhouse the other day and the man in front of the counter was being shown a No. 15-a IC Bausch & Lomb Tessar that was listed in last year's catalogue at fifty dollars, but it was explained that the new price brought it up to fifty-eight dollars and fifty cents. This, the gentlemen seemed to think was a little too great an advance, but the clerk simply produced a copy of the 1914 Bausch & Lomb catalogue and showed him that the price at that time was fifty-seven dollars, a reduction in price about that time being the cause of the fifty dollar price in the 1915 and following catalogues. Putting the matter in this light the customer saw that the lens was costing him only one dollar and fifty cents more than it would have cost him three years ago, and consequently the advance that he objected to did not seem so inconsistent as he had at first imagined, and the price was paid without further protest.

Without looking it up, I do not know whether the same holds good in the case of all lenses on which the price has been slightly advanced, but I feel quite sure that none of our lens manufacturers advanced their prices until it was absolutely necessary to do so; and candidly, the advance should have been inflicted upon us earlier than it was, and would have been, had our lens manufacturers been a fractional part as willing to take advantage of the conditions as have

been those engaged in some other lines of manufacture.

The Tree-Pod

About the handiest and most satisfactory piece of apparatus the photographer can get hold of is one of these "Tree-Pod" camera supports that take the place of the



cumbersome tripod. And do not imagine from the name that it is applicable only to trees. It can be instantly attached to the corner of a house, the back of a chair, or almost anything. It is of steel throughout, nickel plated, and will last a lifetime. Counting the rivets that hold it together, only seven pieces enter into its construction, and there are no parts to get out of order or cause trouble. It is capable of sustaining the weight of an 8x10 camera, and yet it is so compact that it may easily be carried in the pocket. And the best of it is, it costs only one dollar and twenty-five cents, quite an inducement in these times of soaring prices. It is manufactured by the Simplex Photo Products Company, Richmond Hill, Long Island, New York.

New Process Plate

The Central Dry Plate Company, Benavis, St. Louis, Missouri, announce the introduction of their new "Process" plate for photo-engravers. This new plate, they claim, will give a clean, sharp dot with the minimum of irradiation or halation, and that crisp negatives of satisfactory excellence for both line or half-tone may be obtained with ease. In the hands of the commercial photographer these plates give negatives of extreme contrast with ease and certainty. A plate of this kind should be quite useful for certain kinds of work, and a trial, at least, should be given them.

Illinois College of Photography

The prospect is that, at the close of the war, the College will have the largest enrollment in its history.

Roland Ribbe, class of 1912, as a member of the Signal Corps, adds one more to our number of students in France. The service to which he is called necessitates the use of his knowledge of "Three Color".

Sergeant Russell Penglase, class of 1916, who has been a member of the Signal Corps for the past six months, is now instructor of a group of soldiers in the U. S. School of Cinematography at Columbia University, New York. We are very proud of Mr. Penglase, as well as of all our other students who are enlisted in the Army and Navy.

Miss Wallace, who postponed the completion of her course in the Illinois College of Photography, for a trip to California for the winter, writes that she is impatient to resume her studies and will return at an early date.

John Rinehart, who for so many years stool faithfully at the helm, as Secretary of Bissell Colleges, is now doing his part of Government service. He is chief clerk in the Department of the Interior, U. S. Bureau of Mines, in the State University at Columbus, Ohio, a position that we know he is particularly competent to fill.

The Price of Shameful Peace

More than a billion dollars of American agricultural exports were sold to the European nations at war with Germany during 1917. Had this nation maintained peace at the price of obedience to the German war zone decree, this European market would have been closed and this billion dollars worth of agricultural products would, most of them, have rotted on farms and in warehouses, or been used in unprofitable ways, with consequent stagnation and ruin to the American farmers.

Interest as well as duty urges the American farmer to give financial support to his Government in this war.

Buy Liberty Bonds.

Durable Amidol

One of the few disadvantages connected with the use of the amidol developer is the short time which the developer remains in good working condition. The following hints may help to minimize this trouble. It is usually recommended to make the solution of working strength, but this is a mistake. If the developer is made with half or even a fourth the normal amount of water, it will keep much better; it should be diluted to normal strength as required. The water used to dissolve the sulphite should be well boiled and allowed to cool a little before adding the sulphite, the amidol being added when the solution has cooled to normal temperature. There is no advantage in making stock solution of sulphite and adding the amidol in small quantities as required, except that the surplus may be thrown away. The mixed developer will keep in working condition longer than the plain sulphite solution does. The keeping qualities of this developer are much improved by the addition of a little potassium metabisulphite; say, one dram to forty ounces of normal strength solution. There is a considerable difference in the quality of amidol as now sold. The best keeping samples are in bright metallic-looking crystals, which pour freely from the bottle and give an almost clear solution. Other samples, which work well when freshly mixed, are duller in appearance, and cling together as if damp. The solution is dark and turbid when mixed, but clear if allowed to stand: the solution does not keep so long unused nor does it yield so many prints before becoming exhausted.

Stenographers and Typewriters Wanted

The United States Government is in urgent need of thousands of typewriter operators and stenographers and typewriters, both men and women. All who pass examinations for the departments and offices at Washington, D. C., are assured of certification for appointment. It is the manifest duty of citizens with this special knowledge to use it at this time, where it will be of most value to the Government. Women especially are urged to undertake this office work. Those who have not the required training are encouraged to undergo instructions at once.

Examinations for the Department Service, for both men and women, are held every Tuesday, in four hundred and fifty of the principal cities of the United States, and applications may be filed with the Commission at Washington, D. C., at any time.

The entrance salary ranges from one thousand to twelve hundred dollars a year. Advancement of capable employees to higher salaries is reasonably rapid. Applicants must have reached their eighteenth birthday on the date of the examination.

For full information in regard to the scope and character of the examination, and for application blanks, address the U. S. Civil Service Commission, Washington, D. C., or the Secretary of the U. S. Civil Service Board of Examiners at Boston, Mass.; New York, N. Y.; Philadelphia, Pa.; Atlanta, Ga.; Cincinnati, Ohio; Chicago, Ill.; St. Paul, Minn.; St. Louis, Mo.; New Orleans, La.; Seattle, Wash.; San Francisco, Cal.; Honolulu, Hawaii; or San Juan, Porto Rico.

JOHN A. MCILHENNY,
President, U. S. Civil Service Commission, Washington, D. C.

"Mittel-Europa"

"Mittel-Europa is in existence today", says Frederick Naumann, a prominent member of the Reichstag.

He is right. Germany stands possessed of all she hoped to gain when she forced this war. She has reduced her allies to military and economic dependence. She dominates Belgium, Northern France, Poland, Russia, Serbia, Montenegro, and Roumania. More than two hundred million people are under the dictation of Prussia.

If the war ends with conditions as they are at present, Germany's brutal policy of force will dominate the world.

Italy, France and Great Britain have a combined population of one hundred and eighteen million. They are much smaller in area than the Mittel-Europa empire would be, are detached from each other, and confined within narrow limits on the south and west of Europe. Necessarily they would become second-class powers.

The United States, practically alone, would be left to face the aggression of a power with about twice its population, directed by autocratic rulers toward further conquest.

The only way to make ourselves safe is to win the war.

CAMERA WANTS

Advertisements of the above nature shown below will be inserted under this heading at the rate of fifty cents each insertion, for twenty-five words or less; each additional word, two cents extra, cash with order. Those of positions wanted inserted once free. No business advertisements accepted.

WANTED Photographic books and magazines in exchange for figure studies and prize winning landscapes. State what you have. H. Brodine, 913 Bryant Ave., Bronx, New York.

SALE OR EXCHANGE One No. 3 8x10 Century Studio camera, complete with No. 3 stand, 5x7 lens and 5-inch Packard shutter; outfit complete $35.00. Smith's Photo Studio, Colville, Washington.

FOR SALE Empire State view, 8x10, good as new and perfect. Make offer. Rev. V. A. Wood, Cranford, N. J.

PHOTOGRAPH STUDIO California town 10,000, bean and oil district. Fully equipped, modern, one other studio. Bargain, cash and terms. Willett, 1738 Pine St., San Francisco, Cal.

FOR SALE New Improved Seneca View camera, fitted with Seneca three-focus convertible symmetrical lens, speed f-8 and Autic Automatic shutter with carrying case, 3 double plateholders, focusing cloth and large folding tripod. Our price for immediate acceptance, $25.00. Only used a few times and like new. Burke & Drewelow, Wesley, Iowa.

SALE OR TRADE Ill health in my family makes it necessary to dispose of splendid paying studio. Will sell or trade for studio or property well located in Arizona, New Mexico or Colorado. Cross Studio, Corpus Christi, Texas.

STUDIO WANTED Would like to buy going studio in Southern California or in Bay section, preferably Oakland and vicinity. Must be modern with good skylight and well equipped, centrally located and reasonable rent. Address James C. Thompson, care E. B. Thompson, 6 Ellicott Ave., Batavia, N. Y.

EXCHANGE Bathing girl and figure study negatives for good second hand camera or other equipment. State what you have in first letter. Floyd Ferguson, Buda, Texas.

FOR SALE Leading studio in one of California's best towns, equipped with Century camera and stand, Goerz lens, viewing and enlarging outfit; fine location and low rent, reason for selling, interested in other business. It will pay you to investigate; a bargain for a quick sale. Address Studio, care "Camera Craft", San Francisco, Cal.

FOR SALE Eastman 5x7 Home portrait outfit; Victor Studio flashlight complete and numerous photographic articles useful to an amateur or professional. Send for list with prices. A. J. Sicard, 11 Locust St., Athens, Pa.

FOR SALE Paying studio with or without equipment, in wheat country, no competition in 25 miles. A bargain, reasons for selling. Box 84, Sprague, Wash.

FOR SALE Korona Panoramic view camera, 8x20, case, 2 extra holders, good condition, list $70.00, net $45.00. F. L. Wright, Racine, Wis.

FOR SALE Exceptional opportunity, modern studio, owner retiring; educational center of state. E. N. Rogers, Laramie, Wyo.

FOR SALE 5x7 Turner-Reich lens, series III, f-6.8, Regno shutter with 2K filter, sell for $25.00. Address Box 504, Missoula, Mont.

FOR SALE Photographic lens, Bausch & Lomb Zeiss Protar No. 7, finest made, cost $150.00 for $125.00. C. W. Fisher, 660 Market St., San Francisco, Cal.

A SNAP A first class studio for sale, cheap, in the best town in Northern Georgia, about 6000 inhabitants. For particulars write J. S. Reese, Box 507, Cedartown, Ga.

FOR SALE One of the best paying amateur finishing shops and studio in the Northwest, population 7000. Address M. J., care "Camcra Craft", San Francisco, Cal.

FOR SALE The leading studio in the best city of the Pacific Northwest. Big shipbuilding plants employing thousands of men; cantonment of 20,000 soldiers, population 275,000, and growing rapidly. Location best in the city, new eight-story building, three elevators; rent $130.00 per month. Business of over $20,000.00 last year; this year's business so far is much better than last. The best buy you will find if you wish to make money. A no-coupon studio, doing straight legitimate business. Price $5000.00 cash. Reason for selling, wish to enter the service. Address C, care "Camera Craft", San Francisco, Cal.

POSITION WANTED Operator and printer wishes position in or near San Francisco. Have been connected with New York studio ten years up to a month ago. Would start on moderate salary if inducements are good. Not subject to draft. Address Oliver Lippincott, Jr., Mountain View, Cal.

FOR SALE Speed Graphic postcard Carl Zeiss IIB Tessar; "Camera City" 5x7 Seneca view anastigmat lens; Ansco No. 2, f-4.5 Tessar, Velostigmat wide angle, f-9.5; 5x7 lens; Goerz Anschutz 3¼x4¼ Goerz Dagor, etc.; Carl Zeiss Tessar f-6.3 lens; Monarch 8x 10 wide angle; Century 5x7 long draw. Description and price sent, will consider fair trade; can use Automatic revolver or gun. H. Liss, Municipal Court, City Hall, Minneapolis, Minn.

SALE OR RENT My husband has joined the Colors. Will, therefore, rent or sell studio at a sacrifice; only studio in Highmore, So. Dak.; well equipped and doing a nice business. For further particulars address Mrs. H. Lee Jones, Mt. Vernon, So. Dak.

FOR QUICK SALE Studio at Fergus Falls, Minn.; $400.00 cash buys it —cameras, lenses, backgrounds and everything needed in a studio. Rent very low. Reason for selling is that I have a studio at Duluth and cannot atttend to both. For further information write W. Babajoff, 7 East Superior St., Duluth, Minn.

FOR SALE Best one-man studio in Iowa; owner has other business interests which will occupy all his time after October 1st. For further particulars write E. H. Thomson, Cherokee, Iowa.

FOR SALE Am enlisting in the army and wish to sell my studio, which is equipped with new strictly up-to-date complete outfit, No. 2 Vitax lens, electric printer, retoucher, etc. This is a booming little city, as the Government has placed a twelve million dollar order with the Four Wheel Drive Auto Truck Company located here. Would turn over keys and complete outfit for $600.00. Rent only $15.00 per month, which includes water and electricity for light and power; also steam heat. Address Milton Bantin, Clintonville, Wis.

WANTED All-around man; prefer one who can do retouching. Will pay good salary to right party. For particulars address J. P. Hoffman, care Green-Dragon Studio, Sioux Falls, So. Dak.

XXV No. 7 JULY, 1918 Price, 10 Cents

CAMERA CRAFT

SAN FRANCISCO
CALIFORNIA

DAUGHTER OF THE SHEIK
PITTSBURGH SALON, 1918
By ARTHUR F. KALES

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

FAYETTE J. CLUTE, Editor

CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

VOL. XXV JULY, 1918 No. 7

Improving By Dodging

By C. A. Harris

With Illustrations by the Author

The following hints upon the subject of dodging, while taking up only certain phases of the work, may prove helpful to the near beginner; and, if one may generalize, I would suggest that an augmented application of even well known methods may add somewhat to the improvement of results.

For equalizing uneven densities, in the negative, resorting to some method of local shading during the process of printing affords a simple and, with a little practice, quite effective means of improving one's pictures. Usually, in my own case, the negative image is not sufficiently distinct, when viewed from the glass side, to be clearly visible by reflected light. To do very accurate work, it is therefore necessary to provide something in the way of a guide or guides. Supposing that it be some marginal section of the negative that requires holding back, the negative only is placed in the frame, and then, by transmitted light, a mask of black paper is cut so that one edge corresponds roughly with the outline of the thin section, while the part not cut away extends over the two edges of the frame, at the nearest corner. With the mask held in its proper position over the negative, the extending portion is then creased in a right angle over the frame, at this corner.

If desired, the excess can be cut away at these creases, although I usually leave the paper simply creased down at a right angle and forming what looks like the corner of a paper box cover. Pin the fold at the corner and the resemblance is complete. This gives a mask that is easily adjusted both for longitude and latitude, its edges or the creases as a guide in connection with

the corner of the frame, so that the opposite edge, cut to the outline, just covers the thin portion of the negative. With the mask in position, but kept in an oscillating motion to avoid a definite line of demarcation, the printing goes forward. If, for example, the total exposure is to be fifteen seconds, I keep the paper mask in place for five seconds of the time and then remove. About one-third of the exposure for an average case is the amount I have found to be most generally satisfactory, but the proportion can be altered, as more or less seems necessary in exceptional cases. It will be well to so regulate the printing light or distance of the frame from it, so that the exposure cover sufficient time to make these manipulations more easily accomplished.

Occasionally the thin area to be handled will be found located somewhere in the central portion of the negative. When this is the case, a piece of the black paper is cut to correspond in shape, but a trifle smaller, and this is given a circular motion over the negative during the determined part of the printing time, a couple of long hatpins, held in one hand, serving conveniently to hold and move the paper, without themselves creating any perceptible shade. It is also evident that by their use the hand will not shade the negative during this operation. The exact position of the area to be shaded by the mask can be indicated, if necessary, by making use of a pencil mark guide line on the edge of the frame to show the position of the hatpins when the mask is directly over the part to be shaded. If a dense central section requires printing ahead instead of holding back, the above procedure is, of course, reversed and the negative covered with a sheet of the black paper in which is an opening that permits of the extra printing required for such particular portion. This sheet may also be arranged for the corner adjustments as explained.

The foregoing relates to instances where no definite line of demarcation exists between a comparatively dense and a thin section of the negative. But a somewhat different plan must be followed when we wish to more strongly print, say, a window, or perhaps several of them, variously located areas with definite, straight outlines which do not require shading, and particularly when their exact location is not easily determined from the front of the frame. For such cases the mask of black paper must be cut quite accurately and held in its exact position during the printing. Cutting such a stencil-like mask may best be accomplished by attaching a rejected print to a sheet of the black paper, and then, with a sharp pointed knife, cutting out the necessary openings to leave the desired mask. The negative now held in the frame, permits of this prepared mask being fastened in exact register upon the glass or front side with a dab of paste here and there.

When using a film negative it will be necessary, in this case, to attach it to the glass of the frame with gummed strips, so that a fixed position is maintained, and better if this also be done in connection with other processes mentioned. Printing with the mask attached to and in contact with the glass, the frame should not be moved during the exposure or double lines will result. The sheet of paper forming the mask should, of course, be somewhat larger than the negative to afford protection from the light and extend beyond the inner edges of the frame. After the dense area has received the desired extra expo-

The first shows a straight print from the negative; the other a print made by first using stencil mask over windows, and secondly, shading masks over ceiling and lower left-hand corner

sure the mask and all traces of paste on the glass are removed and a second exposure made for the complete print. It will generally be found most convenient to first ascertain the proper exposure for both the shaded and unshaded areas before using the mask, as any departure therefrom will be very noticeable and probably spoil the print.

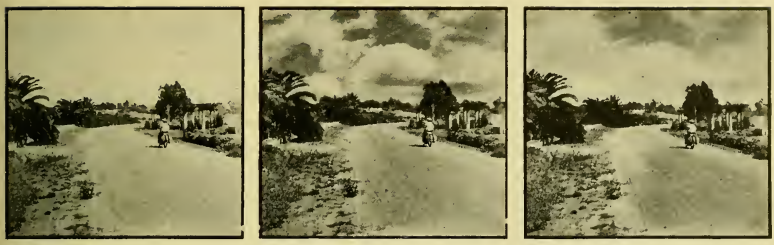
This form of dodging is sometimes achieved by placing the prepared mask between the sensitized paper and the negative; and, after the initial printing, removing by carefully tearing out the mask. This plan is not recommended, however, because there is danger of moving the print and deranging the register, but it might be risked for a single print. With the first mentioned process, one can, by using a little care, induce the mask to last out a batch of prints, and this is a consideration. If an enlargement was wanted from a negative, such as last described, a condition where precise masking is necessary, simply carry the proceeding a little further, first making upon smooth or glossy paper,

At the left a straight print from the negative; at the right a print made by shading dense portions of foliage and giving immediate foreground extra printing

the best print possible and then by copying this print in the camera, produce a second negative that will of course include what has been gained by the dodging. Aside from the above consideration, the making of a new negative as advised, would further be obviated in all especially complicated cases. Following the suggested plans, prints from negatives of uneven densities are generally very much improved, in fact, the game is well worth the candle. In the hands of any but skillful workers, it is a much safer proposition than local treatments chemically, and has, besides, certain special applications as noted.

Another form of improvement coming under the heading of our article, is that involving the printing in of clouds. The improvement more acceptable than any, of course, comes from the endeavor of the pictorialist to make his exposures under such favorable conditions as to include with his landscape the desired sky. Favorable, that is, for the work, if not for the worker. Very good results may be secured from some negatives by blending clouds from other negatives into their horizons by a similar shading process. Success along this line depends upon so overlapping the shading in the two printings that they result, at the point of juncture, in a tone uniform with the balance of the picture, or at least an effect that looks natural. To do this well requires a little practice; but meanwhile, let us consider in detail a case in which most or all of the sky-line presents an abrupt line, such as the crest of a mountain range or the tops of houses, etc. With such a subject I have not generally secured the desired results by shading, for the reason that the sky-line of the picture is given a vignetted effect, instead of a clear outline, such as I prefer in such cases. Of course, there are exceptions, but I think the character of a mountain range is generally determined by the peaks and hollows, and these should be shown fairly clear. For such subjects the following method has proven satisfactory in my hands.

First block out the entire sky portion of the landscape with opaque, using a fine pointed brush and a reading glass for the sky-line or horizon, so as to follow this as closely as possible. This may be omitted if the sky is so dense as to print out white without such treatment. Next place the negative in the printing frame, together with a piece of groundglass, both being brought into contact with one certain corner of the frame by a slight tap upon the table. With this fixed position established as a guide, one is assured perfect register for the printing, no matter how often the frame is opened, just so the two are always returned to fit close down in the same manner. Then trace carefully with a pencil, the ground surface, the horizon line of the negative, and as with the sky portion of the latter, paint with opaque upon the groundglass that part coming below the line. In this work it is only necessary to apply the opaque over a strip about half an inch wide, covering the rest with a piece of the black paper while printing. The first printing, that of the landscape negative, is done as usual, with the negative and paper snugly adjusted into the determined corner, say the lower right one. This negative is now removed and replaced by the opaqued sheet of groundglass with the cloud negative behind it. These, together with the paper just exposed, are given the corner adjustment for register, as before, and the second printing for the clouds is made.



The first is a straight print made without any treatment; the second shows clouds printed in too strong,—a common mistake, while the last is a well balanced view, a decided improvement over the first print

The cloud negative, being a glass one, there will be the thickness of this glass between the printing paper and the groundglass, so it will be well, in such a case, to use a direct light and not move the frame while printing.

Generally, I find it more convenient to use a frame considerably larger than the negative, when doing this work, the small glass negative being held in a central position by fitting it into an opening cut in a sheet of cardboard of the proper thickness. The larger frame is a decided advantage when using the cloud negative, as it enables one to shift the latter about and so bring the desired cloud formations where most effective. Its location determined, this negative should then be fitted into a cardboard mat in the same manner as the regular one, the opening being so cut as to bring it in the right position over the latter. The groundglass used should be of a size to fit the larger frame without requiring a mat. So arranged, the registering can be easily managed in the same way as advised for a frame of the same size as the negative. By using two frames, one for printing the landscape and a second arrranged for the clouds, time and trouble may be saved in changing the various kits, etc., necessary with a single frame.

To return from this digression. If perfect register is secured for the two printings, sky and landscape will just unite, but it is well to err on the right side and make certain that a white or unprinted line does not show between. When preparing for the first printing, lay a couple of small brads between the

The straight print at the left shows a bad case of wries, corrected, as shown at the right, by the simple expedient of blocking out the sky portion. The white sky is not as good in tone as the first, but this was in turn remedied by printing in clouds from another negative

lower edge of the negative and the inner edge of the frame, the paper being adjusted against the frame itself. This, it will be noticed, results in printing the lower, or landscape portion, a trifle higher than arranged for, with the result that its printing will slightly overlap that of the cloud negative. Although the sky-line on the groundglass might, if very simple in formation, be drawn a little low to insure such a union of the two sections, I think it will usually be found better to follow the above plan if the line itself is very complicated. If there are masses of trees involved, draw the line upon the groundglass quite well within their image so that the clouds may print well in among the scattering branches at the top.

When the problem involves a church steeple, the rigging of a ship, or the like, as dominant features of the sky portion, to add some clouds is not as difficult as it might seem. Considering that clouds are, or should be, printed to give a rather soft effect as compared with other objects in the picture, it is often possible to print the sky area entirely over, including even the more substantial objects projecting into this field without detrimental effects. It is, however, well to remember in all cases where a sky is printed overlapping more or less the landscape, to avoid, if possible, matching a very thin part of one negative against quite a dense portion of another. A dense section of the landscape will show rather light in the print, and a part of the sky printing very dark should not come opposite or there may be a mark visible. With this in mind one will find that the averages work out satisfactorily. In the particular case just mentioned, the original negative prints out comparatively white. It would not be easy to opaque a sky with fine lines like the rigging of ships or a suspension bridge; but, on the other hand, if the objects have easily followed outlines like those of a steeple or tower, quite an improvement can be made by blocking out the sky, should there be any obtruding wires, posts and the like. Sooner or later the camera worker is sure to run against this vexing problem of ugly posts and wires.

In suitable cases, a group of selected clouds may, with excellent effect, be printed by the shading process into a section of the sky and so break up a blank space. Again, a white or bald sky can be given a desirable tint by extra printing, using simply the prepared groundglass, as described, for blocking the lower picture; or, if more suitable for some effects, the shading operation. Quite possibly, too, this may bring out clouds in the original negative that were too obscure to show with the usual printing. A collection of cloud negatives worthy of the name should include examples of the various cloud forms that have their own particular designation; and, in using them, different lighting effects must be given careful attention. Manifestly one would not, in his senses, print a storm cloud into a smiling, sunlit landscape, or vice versa; and, with regard to proper lighting, it may suffice to say that, if the camouflage is to pass inspection, the cloud negative used should show a lighting of approximately the same direction as that of the landscape with which it is printed.

The world is full of fools and faint hearts; and yet everyone has courage enough to bear the misfortunes, and wisdom enough to manage the affairs of his neighbor.—BENJAMIN FRANKLIN.

Two Notable One-Man Shows

By W. H. Rabe

Illustrated with Some of the Pictures Shown

The latter half of May the members of the California Camera Club and their friends were favored with an exhibition on the club walls, consisting of thirty very praiseworthy pictures by Louis Fleckenstein, a leading pictorialist of Los Angeles. Mr. Fleckenstein, although devoting most of his time to portrait photography, finds opportunity to produce some very pictorial work in both landscape and genre. His entrance into the pictorial field being far from a recent one, his style is more that of the London Salon members than that of our own younger workers. And, in so saying, no disparagement of his work is intended, but rather praise, praise for its directness and strength. Not a few of our newer workers place too much reliance upon the use of a soft-focus lens, or the employment of other means of befogging everything, or upon some particular style of printing that leaves much to one's imagination, in their endeavors to accomplish something artistic. Unlike these enthusiasts, Mr. Fleckenstein gives us, in his masterful productions, strongly expressed ideas

PALA MISSION—LONDON SALON 1917 By LOUIS FLECKENSTEIN

BABY PINKHAM
PITTSBURGH SALON, 1918

By LOUIS FLECKENSTEIN

fully worked out and with everything of interest well presented, while the non-essentials are properly subordinated.

His portraits are all original in conception, with lights and shadows that are strong and forceful, while his genres all tell their story in a remarkably effective manner. His landscapes are endowed with true artistic feeling and are portrayed with a regard for their individual charm. There is no striving for effect, no apparent seeking for the theatrical; simply the straightforward presentation of that which is pictorial. The prints are all enlargements on Artura, about 11x14 in size, and all have a very rich quality. In some there has been secured a pleasing mellow effect by means of a yellowish tint obtained by toning.

Mr. Fleckenstein, has quite frequently been represented in the salons and exhibitions for a number of years past, and earlier in the year he was elected to membership in the Pittsburgh Salon.

Two years ago, when J. N. Doolittle began sending his pictures to the exhibitions, he enlisted, in behalf of pictorial photography, the interest of his friend, Arthur F. Kales, then residing in Oakland. Mr. Kales had used a camera during his college days, but in the intervening years had cast it aside in favor of other amusements. Having, however, studied art, making sketches and pen-and-ink drawings, the knowledge so gained was an asset. This, combined with his previous photographic experience, enabled him to produce, in this first year's work, pictures that passed the judges of the London Salon. Of those first sent, three were hung and one reproduced in "Photograms of the Year 1916". A few months

later, with six pictures accepted at the Pittsburgh Salon, he was elected to membership therein, and since that time his pictures have been uniformly accepted at all the leading exhibitions.

Good as was his earlier work, good as it must have been to have received the acknowledgment accorded, his work today is representative in its class, that of figure studies. The collection recently shown as a one-man show, at the rooms of the California Camera Club, is characteristic in its high pictorial quality, and most expressive of his style. They comprise nude studies, genres and costume compositions, all in a high key, yet all well handled with that masterly

POSTER—THE GARLAND PLASTIQUE
By ARTHUR F. KALES

skill indicative of an artist sure of himself. The same collection had previously been hung in the Art Gallery at Portland, Maine, where other one-man shows, alike invitational, are being held.

Mr. Kales belongs to that class or school of workers of which Edward Henry Weston, Baron de Meyer, Arnold Genthe and himself are leading exponents, doing work in which a full measure of originality is demanded. This last, combined with the all-important graceful posing of the model and the most discriminating selection of surroundings and accessories, makes it the most difficult of all pictorial work. Although figure studies are his choice, he has produced many charming landscapes, as the exhibitions of the past few years attest. Mr. Kales, employs, as does Mr. Doolittle, a Verito lens, and generally enlarges from a 3¼x4¼ negative, using Artura. His technique is faultless, and his prints have a quality that is indeed rare. The earning of two medals and two honorable mentions at Toronto are his most recent achievements.

While Mr. Kales' present home is temporarily in the Southland, we of the bay cities claim him as one of our local pictorialists.

THE SPOT-LIGHT By ARTHUR F. KALES

The Open Mind

To be a part of all we have met, to see the good points in the views and practices of others, to be wide open to suggestions, this is the mental attitude of the truly great man.

How simple it all is! How vital to success! Yet how rare!

Fairness not only to others but to one's self comes from the open mind.—*Selected.*

Sales-Making Photographs

By J. Bryan Bushnell

With Illustrations by the Author

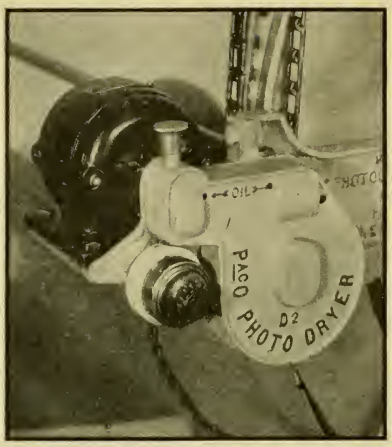
Today there is a good demand, a growing one, for photographs of machinery, merchandise and the like, to be used in selling the goods so portrayed, and commercial photographers who have been wise enough to acquaint themselves with the requirements and equip themselves with the skill and apparatus to do such work properly, are reaping their reward. Only a few years ago, commercial photography, as applied to the making of pictures to be used as sales mediums, was unknown, but today this is changed. Then, all salesmen burdened themselves with needless samples, catalogues and other trunk-filling material that called for an expenditure covering excess baggage and sample room hire that would more than have paid for a generous supply of properly prepared photographic sales books, thus doing away with needless expense and a profligate waste of time and material.

Photographic sales books containing from fifty to a hundred of the best examples of the commercial photographers' art, and yet so compact that they will fit neatly into the salesman's pocket, are now quite commonly used. These books have a wide range of usefulness; enabling the manufacturer to supply, at small cost, photographs of his products, its uses and the like, to his jobbers, his sales force, his branch houses, and even to his prospective customers, and these are supplanting the large bulky albums that were occasionally used a few years ago.

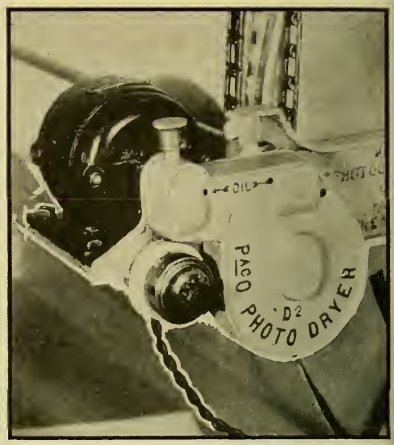
In making the photographs, these "best examples of the commercial photographers' art", some little skill is required. Proper lighting, particularly in the case of machinery or complicated apparatus, is important. In our own work we are partial to a portable artificial light, for the reason that it can be moved about in order to get any placement or direction of the shadows that may seem to best bring out the various details of the subject. The Northern Light, as supplied by the Simplex Photo Products Company, serves the purpose most admirably, although it is made, I believe, primarily for portraiture. The negatives from which the prints below were made are on Eastman film and were made with a Northern Light, two minutes exposure with a quite small stop.

Another important feature is the focal length of the lens. As the finished pictures are intended to be held in the hand for inspection, it is obvious that a lens should be used having a focal length of about eighteen inches, the reading distance, if the natural perspective is to be secured. This is, of course, not always possible, but its desirability should be constantly kept in mind.

The negative made with the subject evenly illuminated and the proper perspective maintained through the use of a lens of suitable focal length, the



THE STRAIGHT PRINT



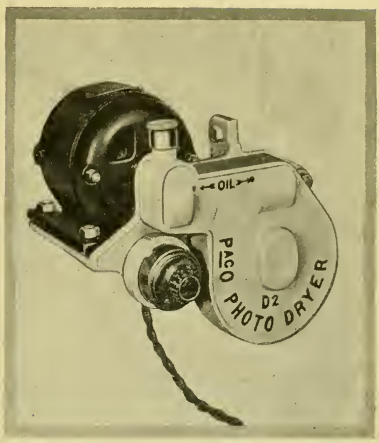
THE OUTLINE TRACED

blocking out of any objectionable or unnecessary background comes next in order. It is, of course, understood that the selection of the proper aspect of the subject has been determined by the wishes of the person giving the order. Considerable work can often be avoided by hanging white sheets or other light colored material behind the object, doing so making it less difficult to follow outlines that might otherwise come against some dark colored portion of the background. The amount of retouching required on both negative and print can also be greatly lessened by a little care in preparing the subject. Bright, shiny parts should be rubbed dull with potter's clay. The Eastman Portrait film seems to give the least halation; and parts of a machine that are greasy or dirty should be carefully cleaned.

Blocking out of the background is accomplished by working upon the film side of the negative with an opaque medium of which there are several good brands on the market. A ruling pen and India ink, used in connection with a ruler where straight lines are concerned, is used to go all around the outline. From this outward the application of the opaque medium by means of a small sable brush, carries on the work. Large areas to be blocked out can be best handled by pasting over them a piece of black or other opaque paper a little smaller than the space to be covered, any intervening space around the edge being filled with the opaque as advised. Such smoothing up of the negative as can be done on the film side should be next undertaken, the use of an electric retoucher doing much to minimize the work, on account of the rapidity and evenness with which the desired stipple can be applied. If the photograph is to be commercially or mechanically retouched it is not necessary to do much retouching on the negative.

The illustrations herewith show; first, a print from the original negative; second, a print after the outline has been followed around as advised; third, a print after the last operation has been completed with the exception of pasting

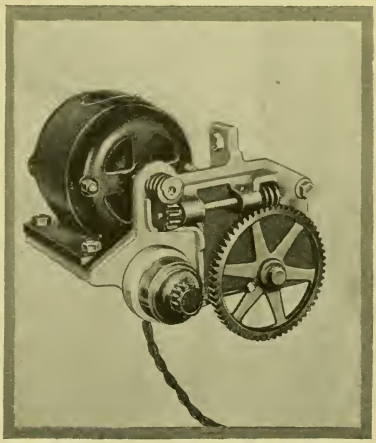
OPAQUE APPLIED



PRINT AIR-BRUSHED

pieces of opaque paper over the remaining untreated larger areas of the undesired background; and lastly, a print from the copy negative made from the air-brushed print. Where this last refinement is desired, as it generally is, recourse is had to commercial or mechanical retouching with the air brush, the work being done upon the print after the above described modification of the negative. For this purpose the print should be made upon the paper having an unsqueegeed gloss surface and paper of such a grade as will give a print showing good gradation and brilliancy, although a soot-and-whitewash effect is to be avoided. To do satisfactory work, the print should be mounted. The two next illustrations show a print from the original negative, and the final

PRINT FROM ORIGINAL NEGATIVE



FROM NEW COPY NEGATIVE

result after the work with an air brush has been done. Often this last including free-hand introductions in the way of a flooring and shadows thereon, as in the case of a heavy machine or engine. Again, the manufacturer may desire to have emphasized certain parts or attachments, and yet retain a semblance of the machine proper. This can be done in "ghost effect", as shown in the illustrations of motor and gearing where all but the essential features have been subdued by a thin spray of air-brushing.

As can be seen, this work upon the print itself, while requiring some little skill in the use of an air brush, is effective in the extreme. The work, however, is not so difficult as might be supposed, for the reason that the air brush artist has recourse to a number of little devices that facilitate his work to no small degree. The most important of these is perhaps frisket paper, a kind made gummed on one side with rubber cement, from which pieces are cut to protect parts or outlines, while the air-brush spray of the desired tone is being applied to other portions. Being transparent, this material can easily be marked and cut to cover any desired part so that a uniform or a shaded tint may be brought right up to the protected edge or outline. The air brush is a tool that responds quickly to the requirements of the user and its capabilities are limited only by the skill of the one who employs it; such skill being a matter of practice and study. Heretofore, it has been mainly the practice to have this work done by the artists regularly in the employ of the engravers who make the block for half-tone printing, but of late it is becoming more and more the practice of the photographer to undertake this branch of the work in his own establishment. This principally for the reason that in many cases the photographs are given this final air-brush finishing, not for the making of half-tone blocks alone, but in order that they may be copied and new negatives made, negatives suitable for turning out a large number of finely finished pictures.

In using the air brush the worker should avoid the tendency of the artist in the engraving plant to overdo the work. Quite frequently the customer is forced to complain that his machine has been made entirely too finished and pretty, even to the extent that the machine itself is liable to prove unsatisfactory to the customer through failing to come up to the handsome finish shown in the half-tone reproduction. It is quite allowable to smooth up too rough looking surfaces and lighten up parts that photograph too dark, but the manufacturer does not wish his rough castings made to look as if they had an enameled surface.

There is really very little that can be offered in the way of definite instruction for the reason that the conditions and the character of the work demanded are so varied. The following suggestions will be found practical and helpful.

For the best photographic results the retouching color should have a brownish or yellowish cast. Avoid a mixture of pure black and white, because it has a bluish shade that, when photographed, does not give the desired or expected gradations or result. Our own retouching department uses black and white, Cologne earth, and just a trace of chrome yellow. In using the air brush, it is most important, if smooth, even work is desired, that the wrist movement be a free and easy one. The motion should be flexible like that used in painting.

To avoid flatness, the retouching must be done with a regard for aerial perspective; that is, the parts nearest the eye should be the stronger, should command the most attention, while those more distant should be subdued. For drawing straight lines with a brush, a brass-edge ruler, mounted on blocks of sufficient height to raise it off the drawing board the length of the brush, is used. In other words, no portion of the brush itself, only the metal just above, should touch or rest against the ruler. The careful study of any machinery or merchandise catalogue that is illustrated by half-tones will give the worker suggestions as to how he can best handle subjects of a similar character. The illustrations used in the advertisements in this magazine are all good examples of this kind of work as applied to the making of half-tones, and one has only to bear in mind that the original retouched photographs from these half-tones were made were about three times larger than they are shown, to judge of the work done. One will realize, after it is called to his attention, that while the half-tone picture of a camera, for example, does not in the least misrepresent the quality of the finish or the material from which it is made, an unretouched photograph of the same camera would give it the appearance of being much less nicely finished than it really is. One will also realize that the soft and pleasing suggestion of a shadow shown at one side and below the camera is hardly such as could be secured by straight photography.

This fairly new field for the skill of the commercial photographer is one that has as yet hardly been explored. There are realms yet untouched and business is simply waiting the clear-sighted photographer who can do the work as it should be done and who can bring his capabilities in that direction to the attention of those who can appreciate the value of his product as applied to advertising and selling of goods.

Photography In Commercial Designing

By J. Walter Doubleday

Illustrations by Laura Adams Armer

The Commercial Artists of the Bay Cities, a young and energetic organization, made up of those talented, but hard-working individuals who do the commercial designing and the like of San Francisco and the surrounding cities, held their first annual exhibition at their headquarters, 220 Post Street, the latter part of May. Not the least interesting of the exhibits, and one that was of particular interest to users of the camera, was that of Laura Adams Armer of Berkeley. It was composed of examples of book plates, book covers, magazine illustrations, and we must not forget to mention a striking poster intended to call attention to the exhibition itself. While Mrs. Armer is known most widely as an art photographer, her essays into the field of commercial designing, a field

in which her photographic skill and knowledge finds wide scope, have been marked with most gratifying success. She, therefore, counts herself as one of the commercial artists, and is heartily welcomed within their ranks and in their association. And her display at their last exhibition explains and justifies this most satisfactory condition of affairs.

In the mind of the laity, there is no very definite idea as to what constitutes a commercial artist or designer, and it is not within the scope of this article to try and explain. I will, however, try and show, by examples of Mrs. Armer's work, how successfully one can, if endowed with the necessary artistic skill, combine photography and ordinary art work to produce results of a high order of artistic merit. Her work shows the possibilities of photography in this field of endeavor, although it is not claimed that the work can compete with direct drawing where cost is a factor, and there is no denying the fact that but few commercial artists can draw or paint the human figure as satisfactorily as does the camera when the latter is employed by one who knows how to pose and light the figure for the best effect.

While modern painters have, to some extent, employed the camera in gathering material and recording effects for future use, they have scorned the use of photography for any more important part. And, while the photographers have always accorded their brother artists of the pen, the pencil and the brush a full measure of respect, they have not seemed inclined to sanction the use of any other than their own tools in their own work. But Mrs. Armer's work is a frank blending of brush work and photography. In achieving her results she has no heed for what is demanded as being legitimate, either in painting or photography. Results are her sole aim, means and methods are secondary, and the results are such as to justify her most fully as the results are secured.

THE STUDIO-MADE FIGURE

THE BACKGROUND PICTURE

THE FINISHED DES

One of her chari
tive, or it may result
bined with more or les
given a copious applicati
tone engraver. But the
semblance of a spontaneous
entirely lost in the unity of th

An example, a book plate, is
a desire for a design in which wa
the out-of-doors. The first was easily o
the leopard's skin was brought forth by
friends, and the out-of-doors was repeatedly c
right at hand. All that was required was the id
bine these elements into a pleasing whole. A fitt
suggested by a line from Wordsworth's "Immortalit
theme, and the work proceeded with. The boy, seated
was photographed in the studio, care being taken to have the
that of the photograph, already selected for its suitablity, to be
background. A small enlargement made of this last, the figure of
was carefully cut out, pasted thereon, and a rock painted in to complete
foreground. The lettering was then done, a little smoothing up of the combined photograph indulged in and the copy handed over to the photo-engraver, with the result as shown.

The other, the Armer book plate, is entirely a studio production. The model was posed beside a large round tray of Japanese origin, this last being after-

wheel, by means of retouching
ork upon the print, as it was sent
yet a pleasing and distinctive design
re.
worked out directly from the camera. The
wreath of flowers, was posed before a white
made. The flowers did not photograph quite as
consequently they were strengthened and made more
dicious use of the brush after the print was made. The
rse, also painted upon the print. This design for a poster
dmired and brought forth high commendation from many most
ritics. Mrs. Armer's skill as a photographer adds greatly to the success
of her efforts along the line of artistic designing, doing much to facilitate the
expression of her originality therein.

It is the function of Art to convey from the artist to those to whom he speaks by means of his poem or his picture a state of feeling or emotion, an attitude, as it were, of the whole inner man.—Ralph Radcliffe-Whitehead.

Winning a Way

By W. Clement Moore

It is always interesting and generally highly profitable to make careful note of the experiences of others, no matter what our line of work may be, for it has always been the mere germ of an idea that has usually resulted in the greatest success, even from the very beginning of things.

A great financial king once said that a business man without imagination would succeed better as a fence trimmer or woodchopper, for the business and professional world has the greatest need for men of keen perception and vivid imagination. I give this illustration because I want to impress upon you readers the fact that you may not be able to adopt any of the methods shown by the experiences here related in the exact manner in which they have been practiced by these people, but you can use your own imagination to broaden out these plans and *make them fit* your needs, your ability and your environment.

The first of these experiences comes from an amateur photographer in Nebraska who states that his net earnings for the past five years during the months of August and September have averaged over three hundred dollars per month. Not all of this is actually received during those months, but the work done brings that amount. Every year he spends sixty days of the time of the ripening, harvesting, threshing and storing of wheat in visiting and photographing the wheat fields of Nebraska. He goes directly into the field or barns wherever the workers happen to be and converses pleasantly with the men. Before he leaves nearly every man has ordered one of the photographs, and as he has an automobile, he finds it an easy matter to take a dozen to twenty exposures every day. He will average an order for three fifty cent pictures from every negative right at the beginning; but this is really the beginning only, for he scarcely considers the immediate sale of his pictures to the men as more than an incidental part of his income. His main market is with the large Sunday newspapers throughout the country and with the magazines. With these he makes it a point to sell the pictures taken this year, early next spring when they are arranging their midsummer issues.

From Massachusetts comes the experience of an amateur who specializes in the industries and who finds enough work of this kind to keep him very busy and to produce for him a very handsome income. Right now you would find him busy photographing rose growers, manufacturing plants, makers of summer specialties, etc., because he always features the things in their season and then carefully files and catalogues his prints, so that whatever may be needed by his custom will be already photographed and ready to be turned into immediate cash. His principal market is with the wholesale houses, business men and the trade and industrial magazines. Many of his pictures bring fifteen to twenty-five dollars each.

A New York State man tells me of his success in photographing the crops of New York State and of its agricultural industries. He is a member of most of the agricultural, horticultural and similar organizations and makes it a point to attend practically all of the meetings, taking photographs of the gatherings, and incidentally orders for those photographs and the hundreds of other copies which he displays at all those meetings and sells at a reasonable price each. As he makes accurate pictures showing various diseases and treatments, growths, fruitage, etc., he finds a ready market among the farmers for such pictures—some of them having reached as high a sale as five hundred copies a year. But like all of the other specialties, he does not depend solely upon the popular demand for his pictures at twenty to fifty cents per copy, but finds a ready market for a large number of them in the newspapers, magazines and scientific publications at fifty cents to five dollars each. You can readily see that if these men make enough out of their popular and immediate sales to cover their expenses and give them even a small margin of profit, then the money made from sales to magazines will be absolutely clear. The party above mentioned is now photographing the late apple and fruit crops. You will soon see many of his beautiful pictures used on the front covers of a number of publications—or perhaps we had better say that you have already seen them, for his pictures of last year are now being used. It is very seldom that he photographs still life altogether, for he believes in having an attractive setting which is a very important thing. The most beautiful girl on the farm is always invited to pose either in or beneath the most beautiful apple tree.

But this gentleman from Indiana brings news which is encouraging to the writer, because he states at the beginning of his "experience" that his success has been due to these very articles. He claims that a year or so ago he acted on a suggestion given in this series in regard to specializing in the photography of children, and began immediately to fit up a section of his studio in the style of a nursery. He happened to have an extra room which, although small, was well adapted to the purpose. It did not take long to collect a large number of playthings of all kinds and the delight of the children when they enter that section of his studio now, is wonderful to see. Their faces light up and in less than five minutes they are either astride a rocking horse or happily at play with one of the toys. He is happily endowed with the gift of making friends with children, and in less than ten minutes you will hear him say "Now Johnnie, bring your horse over here and hold him just a second just as still as you can, while I look at him through my camera". It is needless to say that Johnnie does as he is told, and a remarkable picture is the result.

The above party does his work in a town of about twenty thousand people and has all the work he can do; his dates often run three weeks ahead, and his prices are well up, too, but his fame is spreading throughout the state, as the writer has learned from other sources. I might add, however, that his prices are not exhorbitant, although admitting a good profit. His main difficulty is in securing assistants who are in sympathy with the children—just now he has a lady who is giving good satisfaction with the children, while a young man aids in the work with adults.

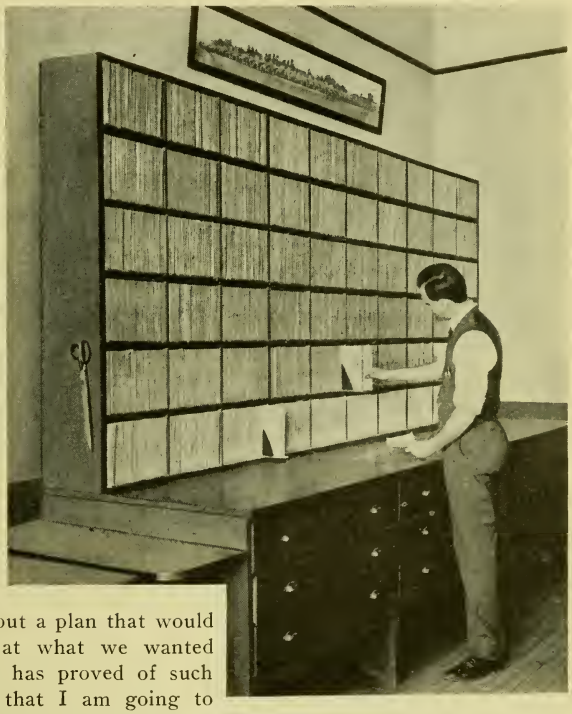
Only One Place To Look

By A. R. Barber

EDITOR'S NOTE: *This article, reprinted from* SYSTEM, *"The Magazine of Business", contains a suggestion that should be of the greatest value to photographers, and particularly the view or commercial photographer who is constantly receiving orders for prints from negatives on hand. Modifications of the plan outlined will, of course, suggest themselves as being advisable to suit different conditions and requirements, but having two ways by which any negative can be at once located is obviously quite desirable.*

A story that tersely reveals Abraham Lincoln's idea of systematic filing is told by one of his biographers. When he was practicing law in Springfield, Illinois, the future president had a bundle of papers in his office to which was attached the legend: "When you can't find it anywhere else, look into this."

I have seen a good many filing departments where the prevailing idea might be expressed somewhat similarly: "When you can't find it where you think it ought to be, dig!"

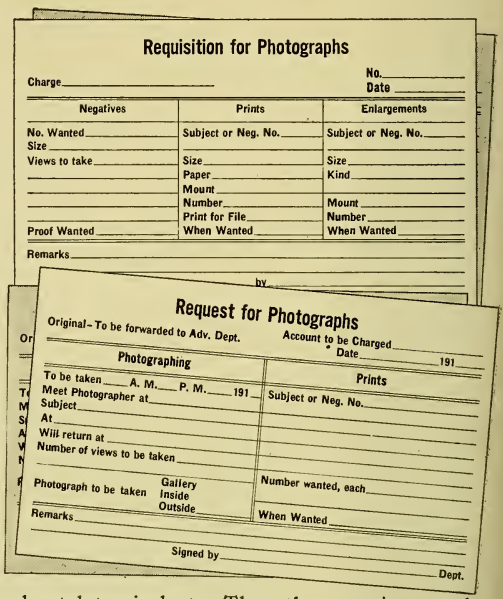


We used to do a lot of "digging" for photographs in our files, for we have thousands of negatives — something like ten thousand, in fact—and as many prints. Probably Lawyer Lincoln would hardly have tried to apply his homely method if he had had to keep track of so many items as that. And we found it necessary, too, to work out a plan that would enable us to get at what we wanted quickly. Our plan has proved of such great value to us that I am going to describe it for the sake of the help it may be in other concerns where the filing cabinets serve, as many do, about the same purpose as another kind of waste basket.

As I have said, we have in the neighborhood of ten thousand negatives and as many prints; with our present method we have little difficulty in locating any we want. One clerk takes care of filing and looking them up.

As far as possible, we standardize on 8x10 negatives. We number them consecutively as they are made, and place them in envelops which fit upright in small wooden holders, ten envelops to a holder. On the front projecting edge of the bottom of the holder appears the first number of the group and, on each envelop, the number of the negative within.

The photographer in charge keeps a numerical index of all the negatives. This index is kept chiefly for precautionary purposes, as it is used only when one of the file prints I'm going to tell about later is lost. Then the negative can be located by the approximate date on which it was made.



Requisition for Photographs

Charge _____ No. _____ Date _____

Negatives	Prints	Enlargements
No. Wanted _____ Size _____	Subject or Neg. No. _____	Subject or Neg. No. _____
Views to take _____	Size _____ Paper _____ Mount _____	Size _____ Kind _____
_____	Number _____	Mount _____
_____	Print for File _____	Number _____
Proof Wanted _____	When Wanted _____	When Wanted _____

Remarks _____

by _____

Request for Photographs

Original—To be forwarded to Adv. Dept. Account to be Charged _____ Date _____ 191

Photographing	Prints
To be taken ____ A. M. ____ P. M. ____ 191 _____ Meet Photographer at _____ Subject _____ At _____ Will return at _____ Number of views to be taken _____	Subject or Neg. No. _____
Photograph to be taken Gallery Inside Outside	Number wanted, each _____ When Wanted _____

Remarks _____

Signed by _____ Dept.

The first print from each new negative is made on double-weight paper and marked on the back to show the negative number, the date, the drawer in which it is to be filed, the guide title in that drawer, and the subject. These prints we file in a cabinet of sixteen drawers, just deep enough to hold an 8x10 print upright. Each drawer is labeled to show the kind of prints it contains and is divided into sections by file guides.

The advantage of filing the prints by subject, and the negatives by number, is that we have two ways to find what is wanted. Frequently, of course, the department wanting the negative has a record of the number; but even when that is missing we can always locate the print if we know what it pictures. We have, in effect, a three-way cross-index; the numerical file, the card file, and the subject file.

Whenever someone in the advertising department wishes to have a negative or a print made, he fills out a requisition like the one shown herewith, and sends two copies to the photograph room; one is returned with the filled order. If other departments want work done by the photographers, they send in the other request form shown. The regular requisition blank is then issued from the advertising department, which also checks up on the order before it is delivered to the original requisiter. In this way responsibility for the photographic work is centralized and appointments are more easily scheduled.

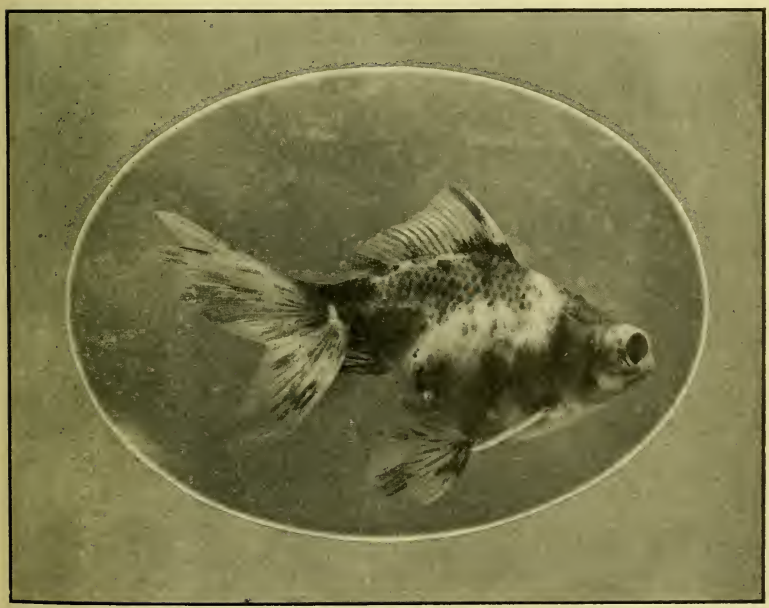
Aquarium Photography

By Edward J. Wessels

With Illustration by Louis C. Crossman

Louis C. Crossman, a well known commercial photographer of Brooklyn, New York, has, in his studio, an aquarium containing some fine specimens of calico fish, a variety that is very attractive and interesting on account of its kaleidoscopic coloring and its telescopic eyes.

These particular fish are quite rare, good specimens being worth as much as one hundred dollars; and Mr. Crossman finds much pleasure in caring for them and watching their movements during his studio hours. Wishing to secure a photograph of one of his pets, he went about it in a very methodical manner, with the result that he obtained the excellent picture reproduced herewith. The difficulties to be overcome were more than would be ordinarily experienced in this class of work, for the reason that the Catskill water with which his studio is piped, and which supplies the aquarium, is effervescent and bubbles are always visible and seem always ready to rise at the least motion of the active and sportive denizens of the aquarium.



THE CALICO FISH IN ITS NATURAL ELEMENT

Mr. Crossman first made a white cardboard case to fit fairly snugly around three sides and the top of the aquarium, and from the unscreened side to the camera, he constructed a sort of tunnel of rather dark cloth, so as to cut off all extraneous light that might cause reflection in the glass surface of the side of the aquarium, through which the picture was to be taken. The top of the tank was left uncovered and a Prosch D-2 cartridge was fired just above, where the black-cloth tunnel joined. As all other light was cut off, it is obvious that the exposure was practically instantaneous, lasted only for the duration of the flash, or about one-twentieth of a second.

An enlarging camera, equipped with a Cooke lens stopped to f-16, was employed in making the exposure on a Standard Orthonon plate. Considering that the subject was photographed through the side of a glass tank, and in bubbling water, the results are indeed very creditable to Mr. Crossman's skill as a photographer—and to the efficiency of the Prosch cartridges for difficult subjects.

The picture shows the bubbles in the water, and also the telescopic form of the eyes of his particular fish; and, aside from its interest as being a picture of very rare specimen, it is an excellent example of what can be done in this line of work if the proper method is employed.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

STRENGTHENING BROMIDES: I have recently been using a chromium intensifier for the occasional weak bromide print that comes through, and find it a great saver of time and paper. The prints are first bleached in a solution made by dissolving eighty grains of potassium bichromate in sixteen ounces of water, and then adding sixteen minims of hydrochloric acid, followed by all yellowishness being washed out of the high light, avoiding more than weak daylight in the process. All that is then required is redevelopment in the regular developer, amidol preferred; a slight washing following the somewhat slower action of the developer.—M. S. S., New York.

FIXING BROMIDES: As a matter of economy I recently started in to use a second fixing bath with the idea that by so doing I could use the first one until exhausted, then replace it with the other by making a new second bath to take the latter's place, as it became the first. In the theory this was all right, but I found that the removal of the partially fixed prints from one bath to another tended to give me an admixture of blue in the shadows when I came to sepia the prints. If the print is not completely fixed when the transfer from one bath to the other is made, there is some action takes place, possible slight oxidization of the developer, that causes this result. The best plan, where it is intended to do sepia toning, is to use only one bath and make sure it is working rightly by inserting a small strip of unexposed plate or film from time to time, and observe the action of the fixing bath thereon.—T. S. S., Oregon.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

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Need of a Definite Aim

The average photographer, at least the average amateur, fails to realize that his equipment is only a means to an end. And as an equipment, we mean not only his camera and outfit, but such knowledge of photography as he may possess. To make such use of this equipment as will afford him either profit or pleasure, he must have an aim. He may find some measure of pleasure in acquainting himself with the goods offered, and selecting an outfit therefrom, and he may find pleasure in acquiring a store of photographic knowledge, but neither of these supply a satisfactory motive, a motive that will assure a maintained interest, or assure a measure of either profit or pleasure for any extended period. As the scope of the outfit is enlarged, the interest wanes, and as photographic knowledge is gained, the satisfaction diminishes if there are produced no worth-while results.

Suppose a man were to buy a desirable piece of ground, and use it as does the average buyer of a photographic outfit. He might level it off and lay it out as a baseball park today, a few days later plow it up and plant it to some field crop, a week or so later excavate the center and construct a swimming pool or a fish pond, only to remove the water and start the foundation of a building a few weeks later. He would, of course, acquire a good knowledge of the capabilities of that particular piece of ground, but having no definite aim, no particular end, he would lose interest, and that particular landowner would thereafter explain that owning real estate was not what some people would have us believe.

And that is just what the average camera-owner does. He makes a few landscapes today, he tries his hand at flash-light work a little later, then portraiture is the one work worth while, with perhaps speed photography usurping its position before a good portrait is achieved. He jumps from one class of subjects to another, perhaps essays them all at the same time. His results do not satisfy, his enthusiasm is lost, the interest dies out, photography is not the source of pleasure that he expected it to be.

The trouble is not with photography, but in the employment of it. Photography affords the means, but not the end. The end, the aim, the photographer must himself supply. Doing this, and then bending the means to the end, devoting his equipment of camera, lens and photographic knowledge to the achievement of a more or less definite aim, pleasure and profit will result, interest will increase, instead of diminish, and the value of the results obtained will be more gratifying, more in keeping with the efforts put forth to secure them. The total production of the average amateur, the one who "takes up" photography for a few years and then gradually lets it drop, could hardly be classed as a satisfactory return for the cash expended and

the time devoted. It too often consists in a very mixed and miscellaneous collection of negatives and prints, perhaps a few of which have some little interest as souvenirs of trips or reminders of friends and acquaintances. There are a number of indifferent landscapes, perhaps a few fairly good ones, but the lot cost more than would two or three good etchings worth much more; and the same holds good with the various other lines that have been attempted.

And do not understand us as belittling the value of the "souvenir", or "reminder" class of work. There is no reason why one should not make such work fill his requirements as an aim or end. We know of several enthusiastic workers who are doing this, and doing it well. They realize that artistic photography is not their forte, they are not interested in natural history subjects, architectural or other special subjects do not interest, and they, therefore, turn to the making of the best possible "records", and those only. And in doing so, they have their own definite aim, just as has the worker who specializes in portraits, farm scenes, historical subjects, or any other special line of photographic work.

For just as morality consists not in doing this or that, but rather the way in which an act is done, and the spirit of it, so Beauty is to be found not in the drawing of great subjects, but in the way in which any subject, however humble, is drawn; a sprig of wild blackberry, by Leonardo, a strawberry plant in the foreground of Cima's picture, the wayside grasses of Durer's drawings, are beautiful by the same token as is the "Birth of Venus" or the "Marriage of St. Catherine".—Ralph Radcliffe-Whitehead.

THE RECENT ECLIPSE By B. T. CARDON
Taken at 5:15 p. m., June 8th, at Logan, Utah, with an ordinary 3A Kodak. A piece of quite dark over-exposed film was used as a screen, and an exposure of one-fiftieth second given.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D.

After-Work On Bromide Prints

The following paper, by such a successful worker as Mr. Greenall, has much to recommend it by reason of its source. It appeals to me also on the ground of my own rather extensive experience in dealing with bromide prints.—[H. D'A. P.]

In bromide enlarging, defects such as pinholes are usually blocked out in the negative, so that they print white in the enlargement, which is then touched with pigment, in order to bring the white marks into harmony with their surroundings. In a similar manner we may deal with defects in composition, which are inevitable in certain branches of photography, such as hand-camera figure work. Those parts which print too dark in the object, which it is desired to remove, can either be reduced on the print or prevented from printing by shielding: and those which come too light may be modified with pigment on the print. In this way great improvements may be effected without altering the true photographic character of the main theme of the picture.

The present article deals with a method of applying pigment to bromide prints, ozobromes, or carbon prints, which has been practised by the writer for some years, and, in his opinion, possesses advantages over any of the processes usually given in text-books. It is equally available for use on matt and glossy surfaces, and for prints of any color; whilst for beginners especially it particularly recommends itself, because, whilst the work dries in a few seconds, and the effect may be judged immediately, it may be cleaned off and repeated as often as necessary without injury to the gelatine surface. Further, no subsequent treatment of the print is necessary in order to hide any signs of the work on the surface: as with papers which are sufficiently absorbent it leaves absolutely no sign of its presence. Briefly, it is a method of applying powder pigments with the aid of a solution of chloral hydrate in methylated spirit.

If only a slight amount of work is required no preparation of the print is necessary; but if the work to be done is considerable, or the paper is hard in character, I usually rub over the print with the corner of a handkerchief moistened with the following solution:

White dextrine.....	10 grains
Chloral hydrate	10 grains
Warm water	1 ounce

The solids are dissolved with the aid of gentle warmth, and a quarter of an ounce of methylated spirit and about two drops of artificial oil of wintergreen or oil of cloves added.

This preparation should sink into the surface, and make no alteration in the appearance of the print, except perhaps to improve it slightly. Gum arabic is better than dextrine; but I have not had sufficiently long experience of gum arabic to say whether, in time and with a moist atmosphere, it might not act injuriously; though I hardly think it is likely. After sizing the print with dextrine, it will be dry in a few minutes, and should then be pinned to some smooth, solid support, such as a drawing-board, and is ready for the application of the pigment.

The following powders meet most requirements for black and sepia-toned prints. It is necessary that the powders be extremely fine and free from the slightest grittiness. The Zebra blacklead, the powder form, not the paste, I have found satisfactory. The soot of turpentine is obtained by burning the liquid and allowing the smoke to impinge on a large enameled iron developing dish supported at a suitable height above the flame. The ordinary lamp-black of the shops is far too gritty. The other colors are the finest artists' powder colors. If ordinary cheap colors are used, they must be ground on a slab of marble with a muller; but as

the amount required is very small, this process of grinding is not very laborious.

Black: A mixture of Zebra blacklead, turpentine soot (or finest artists' lamp-black), and a little Prussian blue (or indigo). The amount of lead should not be too great in the case of matt papers, or it may cause the work to shine like lead pencil work.

Warm Black: Some of the mixture just named, along with a little raw sienna or Indian red, according to the type of warm black required.

Sepia: Similar to warm black, with relatively more of the raw sienna, or Indian red, or both.

Brown: A mixture of black, or warm black, with vandyke brown.

Gray: The finest, and purest white, powdered French chalk. This gives a gray on the print, and is used for mixing with any of the colors mentioned, when it is desired to lessen the depth of their tint for the lighter tones of the picture.

The medium for applying the powders consists of a solution of, say, forty grains of chloral hydrate in one ounce of methylated spirit. A small, wide-mouthed bottle of pure methylated spirit is also required, and is used for washing brushes, cleaning off misapplied pigment, and in some cases also in the application of the pigment.

One of the most important points to attend to before starting is the exact matching of the color of the print to be touched, which can only be done by daylight. Any difference in color between the pigment applied and the photographic image will make the work more obvious than any slight discrepancy in regularity or tone.

There is nothing better as a palette than a sheet of glass, backed with white paper. Several palettes should be kept, one for each color in regular use, because, once prepared, with the pigment attached, the palette keeps indefinitely, and is always ready for use.

To prepare the palette a little of the powder is mixed to a cream with a few drops of the spirit and chloral and spread out on the glass. The spirit soon dries and leaves the powder attached to the glass. On another part of the palette a patch of French chalk should be similarly prepared, and, between these, two or three intermediate tints composed of a mixture of the chalk and pigment.

For spotting, a No. 0 sable brush with a fine stiff point is taken, and the point of the brush dipped in the spirit and chloral, or for some papers in methylated spirit alone. It is then worked slightly on the tint of the required depth to make the spot match its surroundings. The spot is touched with the brush and then dabbed gently with the finger covered with a soft handkerchief, and almost immediately afterwards is wiped off.

All this takes only a few seconds, the work being repeated, if necessary, with the same or a deeper tint. Control is obtained by mixture with the chalk and also by delicacy of touch with the brush, and the latter should be employed to its full extent, as, by using a purer pigment less needs to be deposited to give the same effect. The chalk is, however, especially valuable in the case of glossy papers.

For larger areas I use a No. 3 or No. 5 sable, of the kind sold for oil painting, and work freely, obliterating brush marks and softening outlines by dabbing before the work is quite dry. No attempt is made to get the final result by one application of the pigment. Judgment must be used in wiping off.

For example, in working up to a light area, such as a face, one would not wipe off in such a manner as to carry any pigment on to the face. With glossy papers the medium takes a little longer to penetrate, and with these papers it is necessary to burnish the work as it progresses, in order to see the full effect. This is done by polishing with the corner of a silk handkerchief wrapped over the finger, and briskly rubbed on a cake of white wax before use. Burnishing is accompanied by increase in the depth of the tint of the pigment, deposited, and, with glossy papers, this has to be allowed for.

Areas of considerable size which it is desired simply to tone down, may be dealt with by taking a large brush full of plain methylated spirit, together with very little of the powder, and after mixing on the palette, using it as a wash. In this case, there must be no dabbing, but the liquid is immediately wiped off with the handkerchief used as a whole. This gives a perfectly even tint over the area covered.

As the work progresses it may be found desirable to remove some of the pigment which has been deposited. This may be done

with india rubber, in the case of papers which will stand the application of rubber, or with the handkerchief moistened with methylated spirit. Any marks so formed may be easily leveled up by further application of pigment. From smooth surface papers a wash with water removes the whole of the work, and in the case of matt papers all but slight traces may be so removed.

There is no absolute necessity to fix the work unless the prints are to be given away. I use a thin celluloid varnish; but acetone and amyl acetate, the solvents of celluloid, are now unobtainable. The varnish, which is so thin that it dries without leaving any sign of varnish on the print, is put on very gently with a camel-hair brush. When much work has been required I have sometimes used this and then worked again on the top of the varnish, and again varnished on the top of that. An alternative method of fixing is steaming; but, to be really effective, steaming is a little risky to the gelatine, and I do not recommend it.

In conclusion, the best papers to employ for this process are those of a matt surface which is not too coarse and irregular and yet not too fine, and which are fairly absorbent. Amongst papers with a sheen, a smooth ordinary or "natural surface" paper is good, also carbon surface or semi-glossy, but different makes vary. Cream papers are excellent, and sepia-toned prints are easily matched.—T. H. Greenall in *Photography*.

Covering Power of Lenses and Stray Light in the Camera

Many photographers when they purchase a lens have not the opportunity of testing its performance upon a plate very much larger than that which it is listed to cover, and so do not come to a clear realization of what its properties are in respect to the qualities which commonly go by the name of "covering power" and "illuminating power". Generally speaking, it is assumed that covering power of a lens is a property which is to be desired to the fullest extent. The object of these notes is to set forth the doctrine that, within certain limits, the contrary is true, and that while we owe a great deal to the opticians for the progress they have made in providing lenses of great covering power we have at the same time largely blinded ourselves to the definite advantages of lenses of the older type which exhibit this quality to a much lesser degree.

It may first be desirable to obtain a practical definition of what is meant by covering power as distinguished from illuminating power. The former term relates to the size of plate, or rather to the diameter of field, which a lens of given focal length will cover with sharp definition to the margins when pointed upon a flat subject. The subject requires to be flat, for if it is one consisting of objects at various distances, a lens which possesses what is known as curvature of field may chance to exhibit better performance in the way of covering power than another which actually is superior. On the other hand, illuminating power denotes the size of plate or diameter of field which, in the same circumstances, is filled with definition of a kind. The definition may not be good, but nevertheless the lens will form some kind of image on the plate right up to the edges of the disc which mark the limit of illuminating power.

Now, in the views which are commonly expressed in text-books on photographic optics it would seem that the more covering power a lens possesses the better it necessarily is. Thus, to quote a passage in one manual on the subject, "the larger the circle covered by a lens of given focal length the better, because the lens can be moved about on the camera front without fear of ill-defined corners in the negative, and also because the lens can be used to cover a larger plate." Undoubtedly this expresses a large measure of truth, inasmuch as the conditions named in it correspond with those which prevail very frequently in practical photography. But in an extensive reading of text-books and catalogues dealing with photographic lenses I have rarely found any attention given to the effects which different lenses produce in these matters of covering power and illuminating power. While it is true that ample covering power has its advantages when you use the camera with the lens raised or lowered, or when you seek to cover a larger plate, it is perhaps not so clearly kept in mind that when you are not using a lens under these conditions the reserve of covering power is not then negatived or annulled, but has its effect in the way of illuminating the bellows of the camera, thereby creating a source of stray light within the

camera which is a cause of many complaints of veil or flatness in negatives. This effect, of course, takes place equally whether it comes from great covering power of the lens or from its wide "circle of illumination". So far as concerns the creation of stray light within the camera, it doesn't matter whether the illumination of the bellows is due to the margins of an unsharp or a sharp image. The effect is just the same in producing a secondary source of light within the camera which, in the absence of means to cut it out, must have its effect upon the plate.

The outcome of these considerations is that for many of the purposes which come in the category of ordinary photography a lens of covering power such that its field extends very little beyond the dimensions of the plate will prove in pratice to yield results which are thoroughly comparable with those by an anastigmat costing a good deal more. This applies to such work as copying, photography of ordinary views, and in general to subjects where: there is no call to bring the lens out of center with the plate and, where it is not necessary to work at a very rapid aperture. The anastigmat, with its large working aperture and its ability at that aperture to cover a relatively large plate, has tended to render us less appreciative of the results which can be obtained with the now despised rapid rectilinear type of lens in circumstances where one or other of these two conditions does not require to be fulfilled. It is true that the definition towards the margins of a plate yielded by a rapid rectilinear lens at its full aperture compares unfavorably with that of an anastigmat at its full aperture. But when both lenses are stopped down to a medium aperture, such as f-16 or f-22, the difference in the performance of the two largely disappears, and in these circumstances the rapid rectilinear, from its lesser degree of covering power and smaller circle of illumination, scores on the ground of yielding negatives of a degree of brilliancy and sparkle which often it is difficult to secure with an anastigmat of similar focal length. I have no doubt I am telling a tale which is familiar enough to those who have lived through the era in photographic lenses which includes the coming of those of the anastigmat type. Old hands who have had the occasion and opportunity to compare the actual performance of the newer lenses with those which previously were their accustomed instruments, and under the conditions formerly applying to those instruments, have discovered for themselves that the merit of the anastigmat, and let there be no thought of disparaging it, lies in the direction of creating better performance under fresh conditions which they render possible, rather than in improving the quality of work such as one was accustomed to turn out in the days when the rapid rectilinear was the universal lens and its limitations were recognized.

The moral of all this, and it is one which may not inappropriately be drawn to the notice of photographers in these days, when it is difficult to purchase anastigmat lenses, is that the precise purpose for which a lens is to be used should be carefully considered. It is not advisable to jump to the conclusion that an anastigmat, if it can be got, is necessarily going to do any better work than a rapid rectilinear of the same focal length. Probably it would surprise many of those who imagine that the anastigmat is the lens par excellence for copying to observe in process studios the frequency with which a rapid rectilinear figures on the copying camera. Moreover, the choice of an anastigmat of large aperture is apt to be particularly elusive when one of considerable focal length, such as ten inches and more, comes to be purchased. Here another factor quite apart from that of covering power comes into play, namely, depth of focus. Assuming broadly that the depth of focus which is commonly called for in negatives is conditioned by the actual diameter of the lens stop, not by the f number, it will be seen that in using a long-focus lens it is generally necessary to use a medium or even a small stop to secure sufficient depth of focus. Obviously, then, there can be no useful purpose served in buying an expensive lens which works at f-4.5, when, for ninety per cent of the subjects which are photographed with it, it requires to be stopped down to f-16 or f-22, simply for the purpose of obtaining sharp definition. This, again, is a point which I am sure is familiar to photographers who have had much experience in the use of long-focus lenses in general outdoor photography. It is another of those instances which leads one to the general conclusion that in photographic optical equipment, as in that for other

crafts, such as woodwork or metal-working, it is a bad practice to endeavor to make one tool serve several purposes. Most certainly that applies to lenses. While the anastigmat with its large aperture and its great covering power has its specific usefulness, the older type of lesser speed and lower covering power equally is unexcelled, as regards all-round quality of work, for certain purposes. —Graham Nicol, in *The British Journal of Photography*.

The Photographic Screen in X-Ray Work

When plates of a speed of 400 H. and D. were introduced a few years back, the high-water mark of plate rapidity seemed to have been reached. Yet this was only an advance of a hundred per cent on plates which had been in use for years. When the intensifier screen was first invented for X-ray work, photographic exposures were reduced by about seventy per cent—in other words, exposure was made about three times more rapid; today intensifier screens exist which reduce exposure by ninety-five per cent, X-ray photography is rendered twenty times more rapid. Compared with ordinary photography, this advance is therefore immense.

The intensifier screen, or "photographic" screen as I have termed it above, is a thin card support coated with a mixture consisting chiefly of calcium tungstate, which in its crystalline form glows with an intense violet-blue fluorescence when it is excited by the X-rays. These violet rays are, roughly, twenty times as actinic photographically as the X-rays themselves; hence if the plate be exposed with one of these screens placed in contact with it, an exposure of a second may be given, where otherwise twenty seconds would be necessary, and so on.

In some of the big military hospitals the number of X-ray photographs taken runs into tens of thousands during a year, and the value of the intensifier screen can therefore be understood. One great advantage in being able to give these brief exposures is that the danger of X-ray burns from exposure to the rays is greatly lessened. A technical advantage is that a much sharper image can often be obtained, partly because in a reduced exposure the patient's body moves less, partly because the secondary rays set up by the X-rays themselves in any body which absorbs them cause a certain amount of blurring of the image.

The prepared surface of the intensifier screen is placed in contact with the film of the plate, and in order to secure good contact the two are placed together in an exposure case or casette. The exposure is sometimes made through the plate, the screen being under it, but usually through the screen, the plate being undermost. The former method is adopted where it is desired to avoid the grain of the screen, which is often rather coarser than the grain of the negative, and may interfere slightly with the detail in the structure of small bones, etc.

An interesting point crops up in connection with the development of plates exposed through the screen. When a plate is exposed to the X-rays without a screen, the rays pass right through the plate, only a portion of them being absorbed, and each layer of the film throughout is exposed, consequently development takes place simultaneously throughout the entire thickness of the film. The effect of the screen exposure is entirely superficial, and when the surface of the plate appears fully developed, development has not commenced on the under side of the film; it has, in fact, to proceed downwards by degrees. The result is that longer development is necessary. This fact is not generally realized, and many X-ray workers think that sufficient exposure with the screen must be given to render development as rapid as that of a plate exposed without it, and hence they give too much exposure.

Intensifier screens have revolutionized high-speed X-ray work. Great numbers of soldiers at the military hospitals are examined throughout their treatment for certain internal troubles by the well-known bismuth meal method; a diet containing sufficient bismuth renders the stomach and intestines opaque to the rays, and as photography of this kind involves penetrating the thickest part of the body, the great reduction of exposure greatly accelerates the hospital routine. Exposures of a fraction of a second are so common today (a few years ago they sometimes ran into half an hour or more), that automatic time devices are in general use, enabling exposures of an eighth of a second, for example, to be given with accuracy. "Snapshots" of the heart are no longer a nine days' wonder, and cumbersome devices to hold the body still and prevent breathing from causing movement during

exposure are rapidly becoming unnecessary.

The intensifier screen has done as much for X-ray work as the dry plate did for ordinary photography when wet plates were superseded, and it has today reached as high an apparent standard as the modern extreme speed plate.—T. Thorne Baker in *Amateur Photographer.*

The Camera of the Future

We venture to think that amongst the many developments in photographic apparatus after the war, greater attention will be paid to the ultra-portable type of camera, which is extensively used by workers, both amateur and professional, and has established itself very firmly to the partial exclusion of larger types. The present excellence of the best class of these miniature cameras is due in a great measure to the development of cinematography, and for this purpose we have essentially a smaller outfit than is yet on the market for ordinary use, and the technical excellence of the results is daily demonstrated by enlarging the tiny pictures on to the screen to a size of 9x12 feet or more. In the show cases of the cinema theatre we see 8x10 prints of incidents in the various plays made by enlargement from original cinematograph negatives, and these enlargements are practically indistinguishable from prints made from 8x10 negatives taken directly with a large outfit. Some years ago a camera was put on the market taking such very tiny pictures, and it enjoyed a certain degree of popularity. Unfortunately, it was not of the high-precision class, and was considered more as an ingenious toy than a serious instrument. If such a camera possessed a modern f-3.5 anastigmat lens of very short focus, say 1¼ inches, working on a film 1x¾ inch, its value as an instrument of precision would be very high, and there is no reason why the results should not be every bit as good technically as those produced by a cinematograph outfit. Such a very short focus lens would have enormous "depth" at full aperture, increasing the range of instantaneous work; the grain of the negative—the limiting factor in enlargement—should not be more troublesome than in the case of cinematograph film, whilst the question of design of the shutter and other fittings should present no insuperable technical difficulty. To put any outfit on the market, two things would be necessary—the demand, and the power to supply the demand. The continued progress of the motion picture industry has made such an instrument a question of practical politics, and the present unequalled demand for the ubiquitous vest pocket camera inclines us to the belief that the demand is already there. The question of supply is only limited by the presence of the war.—*Amateur Photographer.*

Cleaning Up Prints

It frequently happens that photographers receive prints for copying or framing which are in a more or less dirty condition, and require some treatment to remove, at all events, a portion of the surface dirt. Some caution is necessary in setting about this work, for what would improve one kind of print would ruin another. Platinotypes are most difficult to deal with unless they can be unmounted and put through an acid bath, but much can be done by dabbing with a little stiff dough made by kneading wheaten flour with water until it is of an elastic consistency and does not stick to the fingers. Failing this, fine dry breadcrumbs will pick up a great deal of the dirt, but care must be taken not to rub too hard, or some of the platinum may be removed from the more delicate half-tones of the image. Rubber or eraser should not be used, nor should the surface be wetted. Carbons are easily cleaned; as a rule, a pad of cotton wool damped with benzole or motor spirit will remove all surface dirt, but will not move any working-up. The same method answers well with bromide or printing-out paper, but with these soft rubber may be used, or even fine pumice powder applied with the finger tip and gently rubbed in a circular direction. A rub of encaustic paste or white wax dissolved in turpentine will often do wonders in removing the tarry deposit from London smoke. Old albumen prints, of which the surface is usually cracked, are difficult to clean, as any liquid tends to wash the dirt into the cracks and make matters worse. The dough treatment is the best for these, as it lifts the dirt from the cracks as well as the surface. Prints finished in water color may be dusted only with a soft handkerchief, and rubbed with nearly dry crumbs. If there is any sign of the color shifting, further rubbing is dangerous. White margins may be cleaned with soft rubber; the green variety is the best for this purpose.—*British Journal of Photography.*

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Using a Spectacle Lens

Under the above heading, one of our Illinois correspondents was advised, in our May issue, to mount the concave side towards the plate. It seems that such lenses can be used either side towards the plate, as pointed out by Wall, in his "Dictionary of Photography"; although he says: "Set lens in mount with the convex side towards the scene". In this connection, we are pleased to have the letter that follows from a gentleman who has given no small amount of time and study to the use of spectacle lenses. He writes: "Dear Mr. Clute:

"Without wishing to become one of those disagreeable creatures who delight in finding flaws in the work of others busier than themselves, I do want to take exception to the advice given an 'Illinois subscriber' on page 206, of the May issue. The lens should be used the other way around; concave side facing forward, and convex side facing the plate. The stop should be in front of the lens; i. e., on the concave side, and if a periscopic lens is used, the stop should be used about an inch in front of the concave side. A meniscus spectacle lens is, however, preferable to a periscopic, on account of its greater covering power and its flatter field.

"In using any uncorrected single lens, it is necessary to bear in mind that the visual and the actinic, or photographic, foci are not the same, and that allowance must be made for this when taking a picture. My method of overcoming the difficulty is this: First, I focus as sharply as possible with the lens stopped down to an opening about the size of a five-cent piece. I rack the lens back toward the plate about one-twentieth or one-twenty-fifth of the distance between lens and plate. This throws the picture, as I see it on the groundglass, out of focus, but it makes the focus correct for the final negative. Then, just before taking the picture I stop the lens down a little more, so that the opening is smaller than a dime. This gives very sharp and clear negatives.

"For soft-focus effects with a spectacle lens, I use a much larger opening, but in this work also I focus first visually, and then rack the lens back toward the plate about one-twentieth or one-twenty-fifth of the focal distance, just as I would do if seeking sharpness and detail.

"One must learn by experience what exposure to give when using spectacle lenses. An opening the size of a dime will necessitate one exposure if the lens in use has a focal length of ten inches, and a very different exposure if the lens is fifteen or twenty inches focal length. After a few trials one can judge by the appearance of the groundglass what exposure to give.

"It is my hope that these suggestions may prove helpful to your Illinois correspondent or to any others who may be interested in the subject.

"Yours very cordially,

(Signed) "Scott Sterling.

"Half Moon Bay, Cal., May 13, 1918."

Do Not Over-Develop

Particularly at this time of the year when the solutions are warm, and therefore more active, the tendency to carry development too far, is one that must be avoided. A false scale of gradation is sure to result the moment development is carried to that point where the image of anything other than an absolute white object near the camera, and in a good light is rendered so dense that no light action is permitted through it during the printing of the negative. And the mistaken idea that continued development will even partially remedy the faults of underexposure, is one that must be corrected, should it exist in the mind. The scale of gradation obtainable with any printing process having white paper as the highest light, is somewhat less than the scale found in nature, and it is therefore incumbent upon

the photographer to avoid any further shortening of the scale available in his print. Correct development, development stopped at the right time, renders only the very highest lights as white paper in the print. Continued development simply takes the next step in the scale and renders them in the same way, reducing the obtainable scale in the print by just the number of steps that have been so advanced into the white paper class. Were it possible, by prolonging development, to increase the scale at the other end, the darks in the print, the loss would not be so great; but it is obvious that continuing the development does just the opposite, and particularly so in the case of an over-exposed negative, or one in which the tones at the dark end of the scale might well be increased, if possible.

Just when to stop development is a matter that should be given careful attention. It is practically impossible to lay down any rule to go by, but the average worker can bear in mind that the tendency, as suggested, is to develop too far. An experiment well worth trying would be to go out and make three identical exposures and then develop them in the same solution for varying periods of time, making sure that the one developed for the shortest period is really slightly under-developed. Prints from these three negatives, made on the paper the worker ordinarily uses, will, in most cases, be a revelation to the worker. Of course the negatives should have received an approximately correct exposure in order to have a definite bearing upon the average work done; that is, assuming that this average work is fairly correctly timed. If one is habitually under or over-timing his negatives, exposures corresponding thereto should be made the basis of the experiment.

Copying Old Portraits

An Oregon correspondent has been asked to copy some old portraits that he does not think are Daguerreotypes, and asks our help. Along between 1850 and about twenty years later, a lot of portraits were made by the simple process of backing up a thin wet-plate negative, with black varnish; or, in some cases, with black velvet. While these pictures generally copy most effectively, often surprising the photographer with the results, the work must be gone about in the right way. After the picture is cleaned, it is copied, with a side light and with the lens pointing through a hole in a black cloth, in order to avoid reflections. But it is in the cleaning, when that is necessary, that care must be used.

If the backing is velvet, simply remove it and use the plate in making a bromide enlargement; these plates often being quite satisfactory as negatives. If the black varnish is on the glass side, as it generally is, remove it and use the plate in the same way, avoiding contact printing, as the film may be very tender and fragile. But one should make sure that the black varnish is not on the same side as the film or image, else that will be scraped away. When they are so found, little or nothing can be done, and when the film side has been given a coating of transparent varnish, that also should not be tampered with. As a rule, it will be best to carefully remove the dust with the finest of camel's hair brushes, and then, if the black varnish be on the back or glass side, either remove it and proceed as advised, or else, if it be broken or patchy, replace or repair it with new black varnish and copy as suggested. But in no case make the mistake that is sometimes made and apply to such pictures the restorative measures suggested from time to time for Daguerreotypes or trouble will result. The silver deposit in the high-lights of these pictures has a metallic luster that easily deceives one who does not know that this method was used quite extensively but a few years after Daguerreotypes were in vogue.

Carbons On Crockery

In reply to our Maine correspondent there is a special kind of carbon tissue for the purpose, a kind in which the colors are of metallic oxide origin incorporated with a somewhat less amount of gelatin than the ordinary kind. The printing should be rather deep, as firing lightens the work. The crockery ware selected should have a good strong coating of glaze and one that is not too hard, ordinary Delft earthenware being ideal for the purpose. All the operations are practically the same as for regular carbon work and the necessary "firing" of the results can be entrusted to those who make a business of doing similar work for the china painters.

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Post cards, 2½x4¼ and 4x5, developing papers, of landscapes, farm and lake scenes; for views of general interest. Class 1.

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Vest Pocket, 2¼x3¼ and 3¼x4¼, developing papers; of river views and landscapes; for portraits and figure studies and landscapes. Class 1.

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Lantern slides, preferably of historic buildings and sites, but anything interesting is acceptable; standard size or Viopticon. Class 1.

3027—C. F. Small, 361 Hassalo St., Portland, Ore.
Class 2.

3908—S. J. Anderson, Box 32, Bellaire, Ohio.
3¼x5½ and 5x7, developing papers, of lake views, Niagara Falls, Cuban views, historical views, bathing girls and many more of interest; for the same. Class 1.

4372—Arthur H. Farrow, 51 Richelieu Terrace, Newark, N. J.
Lantern slides and prints; anything interesting. Correspondence invited. Class 1.

4483—Auron E. Broyles, 111 W. Euclid Ave., Pittsburg, Kans. (Was Butler, Mo.)
1⅝x2½, 2¼x3¼ and 2½x4½, various papers, of buildings, street scenes and miscellaneous views; for nude figures, old ruins, mountain scenes and comic. Class 1.

CHANGES OF ADDRESS

2858—H. M. Sutton, care Sutton, Steele & Steele, P. O. Box 1076, Dallas, Texas.
(Was Van Horn, Texas.)

4204—Claude Vedder, care Atlantic Leading Co., Hammonton, N. J.
(Was Banning, Cal.)

4291—John R. Palmer, Saranac Lake, N. Y.
(Was St. Johnsville, N. Y.)

4432—Hugh W. Allen, 212 Union St., Nashville, Tenn.
(Was San Angelo, Texas.)

4447—G. W. Grant, Jamestown, Cal.
(Was Oakland, Cal.)

4471—J. C. Magill, Blabon, N. D.
(Was Coquille, Ore.)

WITHDRAWAL

4470—Victor S. Stephenson, Box 46, Rutherford, N. C.
Has enlisted, and therefore withdraws from exchanging lantern slides for the duration of the war.

OUR BOOK SHELVES

"Practical Health"

This book by Leander Edmund Whipple of the American School of Metaphysics, carries a definite message concerning the great influence of the mind as a curative agency, both in the treatment of disease, and as a power in the maintenance of health. It concerns itself with a subject that is of rapidly growing interest, and there can be no question of its value and helpfulness to those interested in the use of the mind for practical purposes in individual life, many of whom are already familiar with Mr. Whipple's former work on "Mental Healing". This, his last work, which has already gone into several editions, aims to present the fundamental principles of mental healing in an understandable form, giving suggestions that are applicable to the practical purposes of daily life. Chapters on "Thought Transference," "The Folly of Worry," "The Value of Calmness," "Mental Safeguards," "Curative Thought," and the like, suggest the scope of the work. Published by The American School of Metaphysics, 139 East Thirtieth Street, New York. Price one dollar and fifty cents, net, postpaid.

"Handy Man's Workshop and Laboratory"

The average photographer is a "handy man", in fact, the same inclinations that impel the amateur mechanic to find pleasure and profit in his work are those that incite to photography. It is, for that reason, a pleasure to call attention to this book, a compilation by A. Russell Bond, of hundreds of the most practical ideas concerning all kinds of odd jobs about the home or shop. It is just the book that appeals to the man or boy who is mechanically inclined who likes to use simple tools or home-made appliances, and none so inclined will be disappointed in it. So wide and varied are the subjects treated that we can hardly hope to give more than a suggestion of the good things the book contains. There are over four hundred and fifty pages and over three hundred and fifty illustrations within the handsome cloth covers. Published by Munn

& Company, Incorporated, 361 Broadway, New York. Price two dollars, postpaid.

"Home and School Gardens"

It is perhaps rather late for the main activities in garden making, but there is still much that can be done, and there is nothing like studying up on a subject before the work is actually taken in hand. And for this purpose there is hardly anything that can be of more value than this particular book. Last year there were thousands of gardens planted in response to the Government appeal, but the returns were not what they should have been. This book by Kary Cadmus Davis, Ph.D., aims to remedy this difficulty, this lack of practical information, such as those interested in home and school gardens require. While not technical in its language, the information is correct in its application of scientific principles. It tells about preparing the soil, when to plant, how deep, how far apart the right culture; in fact, just what one wants to know. It is a handsome cloth covered book with over one hundred and fifty illustrations, and illustrations that help the text. Published by J. B. Lippincott Company, Philadelphia. Price one dollar and twenty-eight cents, net.

"Photograms of the Year 1917-1918"

Like all its predecessors, the new volume is of particular interest as giving us the only review of the progress of pictorial photography throughout the world. The new volume is of remarkable quality and interest, considering the difficulties under which it is produced by reason of the closely restricted conditions at present prevailing in England. Of the eighty-six handsome reproductions of salon and other pictorial work, twenty-six are of American origin, this adding to the interest the book has for workers in this country. The price will be: Stiff paper covers, one dollar and fifty cents, postpaid; cloth boards, two dollars, postpaid. It can be ordered from the American publishers, Tennant & Ward 103 Park Avenue, New York, or locally from Hirsch & Kaye 218 Post Street, San Francisco, California.

CLUB NEWS AND NOTES

Club Secretaries and others will oblige by sending us reports for this Department

California Camera Club

During the month there was exhibited on the walls of the club the work of A. F. Kales of Los Angeles. This fine collection, which comprised portraits, genre, figure studies and landscapes, attracted a great deal of attention and received much favorable comment. During July the club will hold a general exhibit of members' work. These exhibits, which are changed monthly, are open to the public and all are cordially invited to visit the club rooms and view them.

On the evening of Friday, the seventeenth, C. A. Love, one of the members, gave a very interesting demonstration on the reduction of contrasty negatives and bromide prints. As usual with the demonstrations, this one was well attended.

The usual monthly outing was held in the vicinity of Leona Heights in Alameda County. These outings, which have been unusually successful this year, are instructive, as well as recreative, many useful hints on landscape work are given and pleasing bits of composition are pointed out. This cheerfully accorded help by those "who know"; results in these outings being particularly valuable to those who would learn.

The work rooms of the club seem to be very busy at the present time. One can drop in there at almost any hour of the day or early evening and find several or more members engaged in some variety of photographic work, or perhaps in conference over the possibilities of a particular print or negative. Serious work, as an object, seems to be the inspiration of all this endeavor.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

Ed Johanson is now operating for the Curtis studio in Seattle, and is doing some very fine work.

Gus Held has a war garden at his suburban home outside of Seattle. He does not, however, expect a crop this year.

O. J. Smith, the jovial plate man, was encountered in Rosebury, Oregon. O. J., according to his report, is some fisherman.

Chester Stevenson of Ashland, Oregon, has gone to Eugene, having bought a half interest in the Lum Drug Company there.

Ed. O'Neil, the popular Eastman Kodak salesman in the Northwest, has given up his position, having bought an interest in the Pike & Markham Company of Portland.

G. A. Held, manager for the Northwestern Photo Supply Company, went fishing lately. A mutual friend, in telling about it, said luck was so bad that Gus threw rocks at the steel heads.

Mr. and Mrs. R. E. Stinson, who owns a studio in Red Bluff, favored us with a real treat, a trout dinner, the third of June. Let me say right here that Mrs. Stinson is some cook.

There's a good story told on our old friend Kirkpatrick, the James & Bushnell operator. Recently he gave a poker party at his house, which, by the way, is five miles out of Seattle. He hired a jitney to bring the guests out and come after them at one a. m., but made the mistake of paying for both trips. The jitney took them out all right, but forgot to come after them later, so the boys had to play cards until seven a. m., when the first car into Seattle came along. Kirk was out even more than the fare they had to pay.

Illinois College of Photography

Professor D. J. Cook, instructor of the Department of Lighting and Posing at the College, and who for eighteen years has given faithful service to this institution, has been recently elected president of the Effingham Public School Board.

Charles D. Gallagher, class of 1904, sergeant and instructor in the Aero Squadron, Camp Brookfield, San Antonio, Texas, was recently ordered to New York, and paid the College a brief visit while on his way there.

Chun Yu Lo, of Hunan, China, has just graduated from the College with high honors. Mr. Lo will visit St. Louis, Chicago and New York, sailing from the latter for his home in China.

LeGrand Flack, for several years the efficient Secretary of the College, has enlisted in the Medical Corps, and is stationed at St. Louis for the present.

A. E. Phillpotts of the College of Photo-Engraving, class of 1917, is now, as a gunner in the English Royal Artillery somewhere in France, doing his part towards getting "The Beast of Berlin".

Those Patchy Stains

There seems to be an idea in the minds of some photographers that, owing to war conditions, the quality of their developing paper is deteriorating; and they point to some bluish or brownish patchy stains that they get on their prints as evidence thereof. Just recently we had an opportunity of tracing down the cause of such a complaint, and found that the trouble was no doubt due to insufficient fixing, due to an effort to economize in hypo by overworking the fixing bath. One remedy is the use of a second fixing bath; and, while this is the plan usually recommended, we do not advise it very strongly, because the exposure to the air as the print is transferred from a weak or inactive fixing bath to another or stronger one, may be a contributory cause of these very stains. A better plan is to cut up a waste plate or film and use the pieces or strips in testing the bath as the prints are being fixed. If one end of such a strip is introduced into the bath and, when fixed clear, turned around and the other end

allowed to fix, one can be assured that prints subjected to the same bath for the same length of time will be thoroughly fixed if not allowed to pack together, so that the solution does not reach the emulsion as it should. Try this plan when you are again fixing prints. You can see when a strip of plate or film is fixed out, but there is no visible sign of the fixing of a print. You will be surprised to find that your fixing bath will sometimes work very slowly without your suspecting that it is near exhaustion.

Golsen's New Quarters

Ralph J. Golsen, the well known lens dealer of Chicago, removed, last month, to larger and more modern quarters at 1128 Argyle Street, that City. There is a fine north light on the premises, so that a buyer, should he wish, can put the lens right on a camera kept for that purpose and make an actual test, there being a dark-room ready at hand, for the development of the plate. This is particularly advantageous for those buying studio outfits.

The Money Comes Back

The cycle of money invested in Liberty Bonds is short and complete. The people lend the money to the Government, the Government lends some to our Allies and our Government and our Allies straightway spend the money, or the greater portion of it, among the people of the United States. In some instances the money paid in by wage earners on one installment of Liberty Bonds is paid by the Government to their employers, and by their employers paid back to them in the way of wages before the next Bond installment is due. Buy Liberty Bonds.

The Book of 1001 Bargains

A copy of the new Conservation Edition of the "Bass Book of 1001 Bargains", has just reached us, and it is certainly a most complete compilation of descriptive matter concerning a remarkably well selected list of cameras and photographic accessories. This catalogue is evidently intended for the use of discriminating purchasers of photographic goods and we would advise our readers to send for a copy before the edition is exhausted. It is sent free upon request and anyone interested in photography will find much to interest him in its pages. This does not take the place of the monthly bargain list gotten out by the same company, but the two together will give one a survey of the available photographic apparatus and supplies that will be of value to him. Write for a copy of the "Bass Book of 1001 Bargains", addressing Bass Camera Company, 109K North Dearborn Street, Chicago, Illinois.

Change of Address

We are advised that the office of the Prosch Manufacturing Company, Incorporated, heretofore located at 334 Fifth Avenue, has been removed to the factory at 213 Pearl Street, New York City, this being done to facilitate the transaction of business by minimizing any possible delays that might be occasioned by having the office and factory at two different points. The management reports an excellent business and judging from the orders received, the use of flashlight powder and apparatus is becoming, each year, a more and more all-season matter.

Rexo Universal

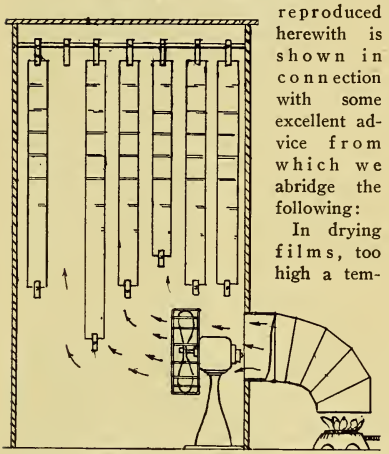
Burke & James, Incorporated, have just placed on the market a new grade of Rexo paper, known as Rexo Universal. This name was selected, because of the very wide range of negatives to which this grade is adapted. The manufacturers are now in a position to supply Rexo paper in four regular grades and also Professional, and all of these grades in three surfaces. Circulars giving a full description of the new grade can be obtained from Burke & James, Incorporated, 240 East Ontario Street, Chicago, Illinois.

The Practical Exposure Disk

This exposure determining device consists of three superimposed celluloid disks, the larger or lower one about three and one-half inches in diameter. With it are complete instructions and a list of plate and film speeds. The price is one dollar, and it is obtainable from the American Photographic Publishing Company, 221 Columbus Avenue, Boston, Massachusetts. It is characterized by simplicity of operation, and it is claimed to be the only disk on the market taking into account daylight-saving time; and further, that it is not a product of empirical suggestion, but is based upon tables that have been in use for twelve years with entire satisfaction and without any change having been made, because correct at the start.

"Commercial Photo Finishing"

This is the title of a well illustrated booklet gotten out by the Northern Photo Supply Company of Minneapolis, Minnesota. As stated in the firm's advertisement of their Perfection Developing Tanks in our April issue, copies of the book will be sent upon request. Much valuable information is crowded between the covers; for example, under the heading "Drying Films", the cut reproduced herewith is shown in connection with some excellent advice from which we abridge the following:



In drying films, too high a temperature is dangerous, as it may result in the emulsion becoming soft and running, and films so dried are inclined to be other than smooth and flat, causing inconvenience in printing, not to mention their untidy appearance. Dry, warm air, kept in circulation, best serves the purpose. There are a number of satisfactory arrangements that can be employed, but we use and recommend one such, as is shown in the illustration herewith. This consists of a chamber or small room easily constructed of Compo board, the size and dimensions depending upon the work to be done and the space available. Along the top, which is provided with several narrow openings to permit air to escape, are fixed strips or cross bars fitted with metal pegs or clips, from which the films are suspended. If, in place of the bars, a buggy wheel or a like circular arrangement be installed by being suspended on a rod through its center so that it rotates easily, any individual film can be detached and removed without disturbing the others. In addition, it is much easier to hang up and remove the films by reason of the clips coming successively into reach as the wheel is turned.

At the bottom and just outside the drying chamber is placed a gas or oil heater with one opening of a large galvanized iron elbow over it, and the other passing through a hole in the side wall. Just inside this opening is placed a twelve-inch electric fan that draws the dry warm air into the drying chamber, the openings in the top permitting it to escape after it has circulated and become moisture laden from the films. The amount of air allowed to escape can be regulated by covering up one or more of these openings as thought necessary, and can be covered when the dryer is not in use, to prevent the access of dust.

The illustration herewith shows the construction of a rather small drying chamber, an ordinary gas burner and twelve-inch fan being quite capable of taking care of a somewhat larger body of drying space.

America First

The Turnverein Club, of Joplin, Missouri, has voted to disband forever, and to give its property, valued at twenty-five thousand dollars, to the American Red Cross Society. The words with which this organization has put itself on record ring with patriotism. They ought to be framed in the home of every foreign-born citizen:

"We must realize the vastness of the change of conditions. * * * It is a unique situation, but it is a surprisingly clear and plain situation. We left one country. Why? Because we were not satisfied with our conditions. We entered another country with the full knowledge (unless we were lunatics) that we had to abide by the rules and conditions imposed by this new country. The new country was very lenient with us. We hardly knew that we were being governed. To us this war comes like a bolt of lightning out of a clear sky. We are awakened from a dream, awakened to the realization that when we changed countries it was also our duty to change our sentiments and sympathies. The object of the verein is to advance German customs, German habits and the German language. This is, under the conditions which have arisen, intolerable and impossible. Our countrymen cannot and will not and should not be expected to countenance the existence of our verein."

This is one hundred per cent Americanism.

XXV No. 8 AUGUST, 1918 Price, 10 Ce

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CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

FAYETTE J. CLUTE, Editor

CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

VOL. XXV AUGUST, 1918 No. 8

Doctor Percy Neymann and His Critic

By Hilton F. Burgiss

Illustrated With Examples of Doctor Neymann's Work

In a recent issue of *Photo-Era,* that ever-ready critic and self-ordained arbiter of photographic destinies, Sigismund Blumann, has this to say of Doctor Neymann's work: "He has so far not been convincing (referring to nudes), and his mastery is in landscapes. The occasional picture and his purity of mind and purpose must eventually bring him what he wants. As perhaps his best, or one of his best friends, I shall always be his severest critic, and until he averages fifty per cent real art, I shall adjudge the several fine things he does now and then as lucky accidents. For above all else, the justifiable nude must never be an accident."

God save us from our friends, and especially from our best friends. We can take care of our enemies; and, in print at least, they let us be.

Mr. Blumann has just enough facility of language interspersed with an occasional clever remark—which, till he averages fifty per cent cleverness we shall be justified in judging accidental—to carry the reader along on a tide of glibness. This, with an ingenious arrangement of statements in sequences that simulate logic, forms a camouflage that is sometimes accepted by the casual reader as convincing. But is it?

What is meant by "convincing" in the excerpt? If the nudes of Doctor Neymann are not convincing, what is it they do not convince? Whom do they fail to convince? Why? Why shall several fine things done now and then, though interluded with a thousand failures, be condemned as mere accidents? And why should an accidental surpassingly fine picture not be accredited to the

art of its maker? There must be an inherent quality in a production that establishes its merit and that merit is not due to the camera, the plate, the developer, the paper, or the model. That one is permitted the intimate knowledge of a man's failures and successes gives one an advantage of publicising what should be more honorably left as confidential. The public and judges and juries of pictures have no right to modify their opinions of one fine picture by the knowledge that a thousand inferior pictures preceded or followed from the same hand.

But, perhaps, it is unfair to hold a critic's nose to the grindstone he himself is turning. It is tripping Don Quixote to a fall on the point of his own lance. So let us pass to more definite and satisfying things.

We were puzzled at finding an article in Mr. French's splendid magazine, illustrated with pictures by a man not mentioned in the text, while Mrs. Brigman and Doctor Neymann are not at all represented, though being the main subjects. Inquiry brought to light that the hypersensitive taste of *Photo Era's* editor rebelled against certain straight lines in the figure of the Neymann model. Looking over the advertising pages, we were led to wish that a like exquisite taste had eliminated the very naked lady who sits on a table, looking into a hand-glass, while she scratches her head. Our own finer perceptions commend the pulchri-

SPRING—Rejected by one magazine; accepted by another

tude of torso and thigh, but rebel against the size of the one visible foot, which too should have been talcum-powdered or washed near the toes. Now, this being one of Mr. French's Aurora studies, he must abide as its sponsor.

It was our privilege to meet Doctor Neymann a comparatively short time ago, and though we have since spent several happy days afield and a few evenings in his work-room, watching him "at it", we have not yet attained to that great friendship which constitutes us his severest critic. We consider some of his pictures as better than others, and some unworthy of his standard. But we

know enough to say positively that the greatest and the least are not the product of a haphazard, slap-bang, shoot and hit-or-miss method. There have been accidental failures. The plans of mice and men will sometimes gang agley, you know. Could you see this good man study his negatives, experiment with lights, lenses, apertures, papers, and developers, and note his whole-hearted pleasure in the doing, you should find it enlightening—and very "convincing".

Never did a photographer approach his art more seriously. Never were pictures made with more preconception or greater forethought. Models were engaged for a particular fitness, the location decided days in advance, the season and position of the sun estimated, the "properties", as they are called in theatrical parlance, laid out to hand, and even such plates as would best suit the purpose, determined. Later, on the return home, the developer was compounded to fit the exposure, and as to what was done with the negatives, how they were repeatedly tried out on the enlarging easel, how the effect of various stops were considered and trials made, not to mention different papers and varying masks; these things are confidences, and we shall keep them such.

PEACE AGAIN—Accepted London Salon, 1917; rejected Pittsburgh Salon, 1918

Doctor Neymann is a doctor of philosophy, not of medicine. His attainments are many and were gained at American and European universities. His

mind is scientific. Nothing of the happy-go-lucky in his makeup. What he does, good or otherwise, is not an accident. After days filled with duties and heavy with responsibilities, he goes to his dark-room like a hungry man to the dinner-table. He loves his hobby and he is versatile and prolific. The public sees only his best, or so much of his best as he exhibits. His intimates have the opportunity of seeing what he rejects and sometimes these intimates take advantage of a knowledge,—by the way, not even Boswell told the color of the Johnsonian socks. And we know from studies in existence that Landseer made a hundred efforts before presenting the finished picture. Painters make their studies by hand as they paint, by hand. Photographers make a dozen trials to get one finished picture,—and it is not a fortunate accident when one is obtained. In fact, that much more to the contrary.

Of his friends and his critics, the good Doctor has less cause to be proud than of his work. The particular picture that offended Mr. French appears herein, and is by many competent judges considered one of the best. Pictures rejected at the Wanamaker Exhibit won high enconium at the London Salon. Oh! Those wonderful critics. Could one but sic them on one another. But they have, apparently, some code of ethics not unlike that of the medicos, whereby they cannot openly, directly, or consciously discredit one another. Living as it were, by the sword, they take such precautions as they can to avoid dying by the sword.

There is no resentment in the Neymann disposition. If there were, we could fancy his saying to his best, or one of his best, friends, who shall ever be his severest critic: "Et tu Brutus."

But Brutus was effectual and Blumann can never be a Brutus.

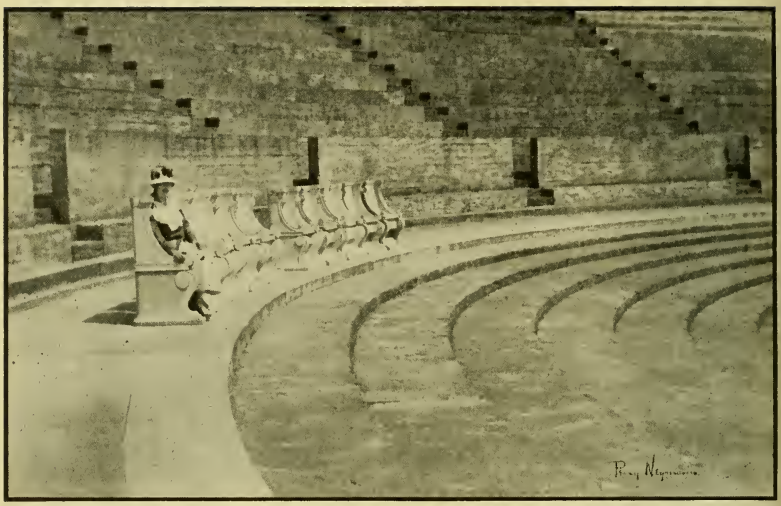
The evidence is in the pictures. As many are offered as the editor of this

ON SAN FRANCISCO BAY—Portland Society of Arts Salon, 1918

THE LOST ACORN—Camera Pictorialists of Los Angeles, 1918

magazine will accept. They are taken at random from a large collection without any attempt to choose the best or omit the least. The reader shall be the judge. We may, perhaps, have enthused in treating our subject. Many happy hours, many unselfishly accorded benefits have put us in the Doctor's debt, and we are led to an attempt to make some little repayment in seeing that a measure of

HO! CHARON—Pittsburgh Salon, 1918



UNE OLYMPIADE—London Salon, 1917

justice is done him. He deserves that of us and of the photographic contingent all over the world who have enjoyed the pleasure of seeing his work.

The art for which we have no room now is the pseudo-art for which there is never any room in a great age. For art about which men and women are as desperately in earnest as they have to be about war, there is always room.

And so any beautiful representation of noble human character in action or in repose, any picture which will make a child more observant of the beauties of nature, as many of us have been taught by Turner to see the clouds and the mountains, in a way impossible to us before,—any presentation of a flower or a tree which makes us more sensitive to the beauty of its growth,—the rhythmical beauty of the wild oats as they wave on the hillside in spring, the exquisite poetry of the ceanothus as it clothes the mountains with its sheen of blue,—the golden glory of the summer tarweed,—even a twig of olive or a spray of peach blossom, drawn by the loving hand of one whose eyes see the greater beauty of it—all, or any of these, may serve as examples of what we may choose for our walls. There are no special pictures for schools; all that is beautiful, it is fitting to use in them.—Ralph Radcliffe-Whitehead.

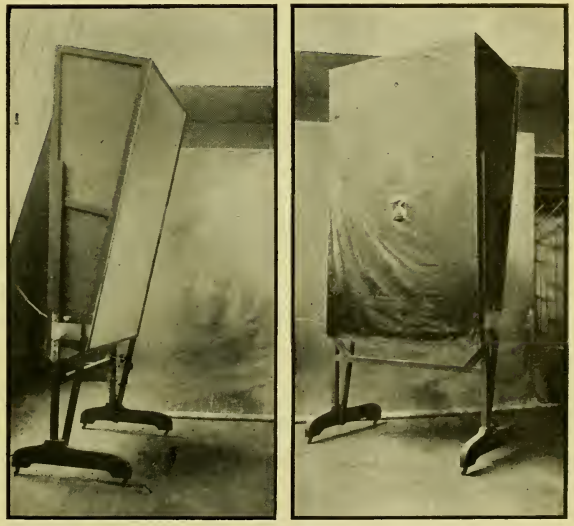
America must place a higher value upon the creation of beauty as an expression of life, and Americans must approach the personal working out of that beauty in a humbler mood. The designing of hardware and textiles, the building of an automobile garage—in all these the national honor is involved, as well as in the defense of the flag. When we come to feel that truth and live it, the making of great pictures and statues will be a natural, an inevitable thing.—*New York Times.*

Home-Made Flash-Cabinets

By R. C. Ward

With Illustrations by the Author

Since my article, "Flash-Cabinet Portraiture", was published in the April issue, several letters of inquiry as to the construction of a flash-cabinet have reached me. The arrangement of the wiring and the method of producing the flash seems to be the information most desired. For the benefit of those readers who may desire to construct a flash-cabinet, I can hardly do better than describe, in detail, the one I use. The two illustrations herewith show the construction quite clearly. The frame-work is of 2x3 strips, so put together as to give a slightly inclined front about four feet wide and about five deep. As shown, the slant of this front is about the same as that of the ordinary single-slant skylight shown behind and to the left. The feet or supports are sawed out of three-inch boards, two feet long, and both are supplied with castors so that the cabinet can be moved about to get the desired lighting without disturbing the sitter. The front is neatly covered with tracing cloth, as this gives an even diffusion of the light. The ends and back are covered with white oil-cloth, glazed side in, while the top is left open to permit the small amount of smoke to escape.



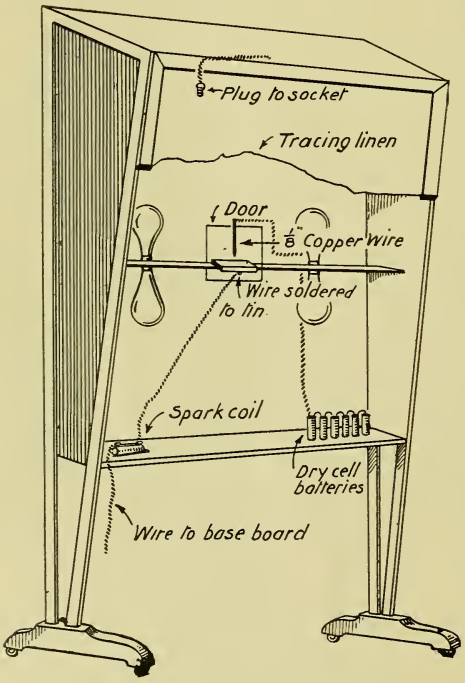
END AND BACK VIEW OF CABINET

The tracing-cloth front is put on with a small wooden strip all around the edge, the oil-cloth at the ends is tacked on from the inside while that at the back is put on from the outside, the bottom and part of one side of this last being left unfastened, so that easy access to the inside is obtained in case the batteries or the wiring demand attention. In this back covering, a little below

the center, an opening is cut about six inches square, and through this we place the powder on the flash pan. The small strip nailed on the side of the cabinet forms a pocket that contains my box of flash powder, always handy and out of the danger zone.

Just inside the opening shown in the back of the cabinet is the powder pan, made of a piece of tin with its edges turned up. Inside the cabinet there is a cross piece of the framework at this point and this supports the pan. To the under side of the latter is soldered a small copper wire that passes to a spark coil resting on the bottom of the cabinet, and then on to the wire along the base-board. Another like wire is so arranged that its end forms a point just above the center of this pan, this wire being connected up with six dry cell batteries, wired in series, in the bottom of the cabinet. The sketch herewith should make the whole matter quite clear, I believe.

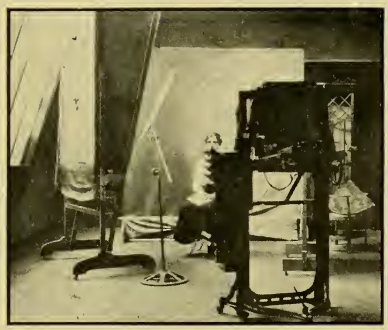
Should one wish, it is not at all difficult to arrange this firing pan to slide up and down on an upright or perpendicular piece of wood near the center of the cabinet back; and, if more movement is required, this upright strip can easily be so arranged as to slide from side to side between two grooved pieces, one in the top and the other in the bottom of the cabinet. This last, however, is hardly necessary, as the castors on which the cabinet rests permit easy shifting of the light. I mention such an arrangement because it is one used in my large permanent flash-cabinet that has a front some ten feet wide and takes the place of a skylight. This was built, not because I thought so large a light necessary, but because I had the space and wanted something that looked as if it was a part of the room instead of something within it. The one I have tried to describe answers every purpose and costs only a small amount for material and a little labor in putting it together.



The wire from the spark coil in the cabinet is best run along the base-board of the studio wall as its appearance is better than that of so much loose wiring lying promiscuously on the floor to endanger the feet. This wire should extend to two sockets, one fairly close to the usual cabinet position for bust pictures, and

Shows relative position of Sitter, Head Screen, Cabinet and Side Screen, for making an ordinary lighting with Flash-Cabinet

the other far enough away for groups or full length figures. To reach from these base-board sockets, whichever is being used, there is a cord to an ordinary cut-off switch on the back of the camera stand. This switch prevents any acci-



The First shows position and relative distances of Camera, Cabinet, Head Screen, Side Screen and Sitter, for ordinary bust portrait. The Second shows the arrangement in producing a Shadow or Rembrandt lighting. The Sitter is placed on a line with near end of Cabinet. The light comes around the head, because the Flash is at a greater distance from the Camera than from the Sitter

dental firing of the flash when loading the flash pan or opening shutter in focusing before exposure. The wire from this switch passes on under the top of the camera stand to the lens board, and through that to some such part of the shutter, that when opened, by pressing the bulb, the blades will connect or form contact with a continuation of the wire, placed at the right distance, completing the circuit and firing the flash powder in the cabinet. That is, if the safety switch on the back of the camera is closed. This arrangement inside the lens

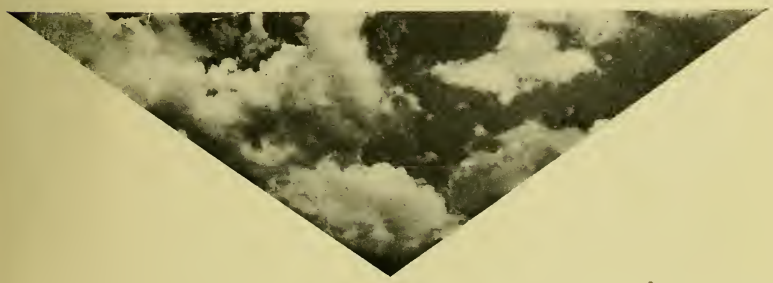
CHILDREN ARE EASY WITH THE FLASH-CABINET

board will depend upon the style of the shutter used; and, if one is in doubt as to the best way of doing this, he need only ask the advice of some electrician, explaining that he wishes the opening of the shutter to close the circuit. I use a Silent shutter, and run one wire to the support for the blades, while the end of the other wire is so fixed as to be touched by the blades as they are fully opened.

The cabinet also contains four two-hundred-and-fifty watt lamps, arranged on two cross pieces, made of the same material as the framework across the back, to which they are attached. These are wired together and provided with an ordinary flexible cord that can be connected to a socket in the ceiling of the room. They serve a most useful purpose in enabling one to judge of the lighting that the flash will produce, as well as furnishing light by which the focusing can be done.

As stated before, the supply of powder is kept on a little shelf at the end of the cabinet. With it is a little wooden paddle, about one inch wide, that I use to measure out the powder. Experience soon teaches one just how much powder is required for different distances; and, once this is learned, one has no trouble in securing absolutely correct exposure every time. The ease and convenience of the flash should recommend it to a great many photographers and if they would but give it a trial, I am quite sure not a few of them would follow my plan and use it exclusively.

The pictures showing position of cabinet in actual use are somewhat misleading in this, that the lighting shown on the sitter's face is not what the flash would give, but instead, the effect of the daylight used in photographing the arrangement. It was thought that photographs showing the actual position of camera, sitter and cabinet, would be more satisfactory than a like number of diagrams. In the illustration showing the arrangement for shadow or Rembrandt lighting, it must be understood that the depth of the shadow produced depends upon the distance of side screen from the sitter. The camera is pointed so as to just miss taking in the further end of the flash-cabinet, and an extra long lens hood must be used.



Using the Retouching Machine

By O. S. Stebbins

With Illustrations by the Author

There is no denying the fact that the retouching of portrait negatives is a necessity, and it will, no doubt, continue to be such as long as photography is practiced and there is any desire that the portrait made thereby conveys to the beholder an impression that is fairly truthful and in accordance with what the eyes and mind perceive in the face of the original subject. It is a well known fact that photography emphasizes discolorations or variations in color in the skin that are barely or not at all perceptible to the eye. Cases are on record where the approach of small-pox and similar diseases have been disclosed by photographs showing these characteristic spots before their appearance could be otherwise detected. In the case of wrinkles and other depressions, the tendency of the photographic plate to greatly emphasize them requires no comment. We have but to photograph an ordinary sheet of paper to realize that the negative can show granularity and irregularity that the eye fails to call to our atttention, and when it is remembered that the skin is filled with minute blood vessels and carries coloring pigments that are much more non-actinic in shadow than they are in strong light, we can understand the reason why these depressions in shadow are so strongly and unnaturally emphasized in our negatives.

The use of orthochromatic plates help to some extent, and the employment of a soft-focus lens is another means of minimizing the difficulty, but neither of these are a complete remedy, while the increased exposure necessitated by the first, and the loss of detail and rather fuzzy effect produced by the latter, is not always satisfactory.

Retouching, as ordinarily done, is work that not only requires considerable skill, but it is tedious and time-consuming, to say nothing of the strain imposed upon the eyes and the nerves, particularly if the work is continuous.

For many years I have hoped to find some relief from these drawbacks, and while I have tried the several retouching machines offered for the purpose during the last twenty-five years, I have not been satisfied with their performance, although the measure of success they achieved had the result of convincing me that a satisfactory retouching machine was a possibility that would ultimately become an accomplished fact. Those tried all had the advantage that more lead could be applied when necessary, as the film did not become glazed and refuse to take, as is the case in hand-retouching, and all had the advantage of greater speed and smoothness of work. With the vibrating of the lead, a feature characteristic of them all, the lead has a rotary motion and strikes the film in a new spot with each vibration, both of which are impossible in hand work, and there-

fore the lead sticks and builds up much more satisfactorily. Some of the machines tried were unnatural and unwieldy in the hand; others required that they be held at a particular angle not always easy to maintain in actual work; and still others were so arranged that the vibration of the lead was secured only by the machine causing the hand to vibrate at the same time and at the same high speed.

One of the machines tried, the most satisfactory to use of them all, was discarded rather reluctantly, simply because it was utterly impossible to keep it in proper working condition. Through this fault it was soon withdrawn from the market; in fact, I do not remember having ever seen it advertised, it having been brought to my attention by a demonstrator friend who knew of my desire to try any device of this kind that promised to do away with the irksome hand-work in retouching.

I believe, however, that I have at last found an electrically operated retouching machine that fulfills all of the requirements, and I know that it is far in advance of any others that have been on the market for a short time in the years that have passed. The machine itself, the holder that carries the lead, consists of a loose outer sleeve-holder of a convenient size and weight that does not inconvenience the worker by reason of its dissimilarity to an ordinary retouching pencil. The loose sleeve that the hand holds gives perfect control and avoids any vibration other than that of the inner, or lead-holding part. As the machine can be so set that the vibration is fast or slow, as desired, the effect secured is bound to be perfectly uniform, and in accordance with the work that one wishes to do. It is, of course, necesssary for the worker using one of these retouching machines for the first time, to become accustomed to it, but it takes only a very short time to do this. I find that some pick up the knack of using the machine in less than two weeks, while others require a little longer, although the knack comes to anyone with a little practice. A poor retoucher, one who has never been able to do the work successfully by hand, and the person learning retouching, is inclined to become expert with the machine in shorter time than is the old retoucher to whom the particular touch used has become a sort of second nature.

The machine requires only that the user is capable of judging where the lead should be applied, and that he has devoted the little time necessary to secure perfect control of the lead. Judgment as to what is necessary and the easily acquired knack of using the machine, is all that is necessary to enable one to more than double the amount of work that he can turn out. I find the machine a wonderful help to me in thus increasing the amount of work done, and the rest and relief that it gives my eyes is most refreshing and gratifying. Using the machine one does not have to watch the effect of the lead, one does not have to worry about whether it is sticking or not in the heavy shadows, but simply goes ahead with a knowledge that the lead is being smoothly and uniformly applied.

Myself a rather fast retoucher by the hand method and disinclined to rush work with the machine, preferring to enjoy the relief and comfort that it gives me, I find myself doing only about double the amount of my former work. But

HAND RETOUCHING ONLY

MACHINE RETOUCHING ADDED

I have letters from others who have, on my recommendation, used the machine only three or four weeks, and they claim that they do from three to five times the work by its use. The machine in question, the one I find so satisfactory is the Green's Lightning Retoucher, the invention of Roland E. Green, of Hastings, Michigan, a member of the National Association, and one of the best known photographers in his state. Mr. Green, I learned, has, like myself, long had the idea that in order that a machine of this kind prove a success, the lead should be applied to the film by a side rotary motion, and that there should be no unusual weight on the holder to interfere with its ease and natural control by the hand. His machine has been perfected along this line; and, as it is sold on a money-back guarantee, I feel quite sure that I will be doing a kindness to my fellow workers by calling their attention to its merits. They will, I know, thank me for so doing, just as I have thanked the kindly disposed demonstrator, himself an expert retoucher, who first brought this machine to my attention.

One of my fellow photographers writes me that he has become so favorably disposed towards the machine and the rapidity with which he can do the work, that he is contemplating selling his business and opening a studio devoted to retouching alone. He believes that he can make money much easier by so doing, and not be tied down so closely to his work. Another friend to whom I recommended the machine, is more than pleased, because it enables him to produce a stipple that is entirely free from the scratchiness which he has never been able to avoid in his hand-work, to say nothing of the increased speed in production. Still another friend, one who conducts a studio devoted exclusively to commercial photography, is highly pleased and says that the results secured exceed his anticipation. This last phase of the work I have not touched upon, for the reason that commercial photography is entirely out of my line. I know, however, that

speed is a desideratum; and, as the turning of a small thumb-screw on the vibrator box at the side of the retouching desk adjusts the machine to fine, medium, or coarse effects, the results secured should be most gratifying.

With this I am sending three pictures, the first showing an unretouched proof; the second, a proof from the negative after being given nineteen minutes hand-work, or until the deep shadows would take no more lead in that way; and the last showing a proof from the same negative after eleven minutes additional work had been done with the machine. In the second, or the hand-retouched result, the reader will notice that some of the deep shadows still remain; and, while these, of course, should be allowed to remain to a certain extent in order to preserve the natural expression, it is not necessary that they be so distinct. As still further softened, the picture retains a perfect likeness, and is much more pleasing to the customer. The third picture, the one showing the final result, could only be achieved by the use of the machine, as all the lead that the negative would retain when hand-work had been applied. These heads are small ones, measuring but a little over an inch in the original negatives, and the reader can therefore judge of the fineness of the work that can be done.

THE UNRETOUCHED PROOF

Any photographer who desires to increase the quality of his work and lessen the time that is required to turn it out, to say nothing of the ease and comfort with which the work is done, should possess himself of one of these mechanical retouchers at once, now that a satisfactory form is obtainable.

Formulae for "Wornoutedness"

If, after years of constant work, worry, and close application to the studio and dark-room, the photographer finds himself reduced to a bunch of nerves, he should try the following:

No. 1.—A good bucksaw.

No. 2.—A good saw-horse.

No. 3.—A two-and-a-half-pound axe.

No. 4.—Half a cord of wood four feet long.

Place a stick of No. 4 on No. 2, and by using No. 1 cut it to stove lengths; these to be split to right size with No. 3. When the No. 4 is all gone you'll find "that tired feeling" has gone some, too. The dose should be repeated until a cure is effected.

One Year's Experience

By Charles S. Price

With Illustrations by the Author

I run the barber shop in the Gayety Theatre here in Minneapolis; and, until about a year ago, depended upon fishing and boating for the out-door recreation that I craved. Wishing to show my friends some pictures, so that they could form an idea of the beauty of the fishing grounds and know that my stories about the size of my catches were not all talk, I decided to become an amateur photographer. With this one object in view, and the advice of a friend to the effect that a plate camera, using a 4x5 plate, was the best thing to have, I felt that good judgment and nerve was all that was required.

The last two I possessed, and the other, the camera, I found in a second-hand store,—price, three dollars and fifty cents. I planked down the coin, looking as wise as I could, and left the store a well satisfied customer. The next Sunday I took the camera to our fishing grounds, having bought a dozen plates and loaded two of them into the holder. Having no instructions, the setting up of the camera involved some guessing. I did not want to waste any plates by taking only a small part of the scene, and still I did not wish to damage the camera by trying to force too much picture material through a small hole. So I decided that, as it was a bright day and favorable to photography, I would split the difference. I pointed the camera at some fish, carefully displayed, and felt that by including the sun itself, the boathouse and a good part of the lake, the boys would be satisfied with the results. When I got home, I soaked that plate in the developer, made up according to the directions on the bottle, for about an hour, or until I thought it was black enough; then putting it in the fixing bath. I don't know just what the trouble was, but that plate is not fixed yet.

I found I had wasted one plate and a batch of chemicals, so decided to be more careful and give the camera every possible chance. My next exposure was made in the brightest sunlight, with the opening in the lens as wide as I could get it, so that the picture would have no trouble in getting through. The plate acted in just about the same way; nothing resulted, despite the fact that I tried mixing the developer and the fixing bath together. I had about decided that either my friend had given me a "bum steer" or the second-hand dealer had taken advantage of my lack of experience, when my wife suggested that there were a number of books on photography at the City Library, and it might be worth my while to read up on the subject. So I got one of the books, sat up half the night reading it through, and the next day tried again, this time with the house as a subject. While neither my wife or any of my friends could see the picture, I knew I must have gotten one, because I could see it on the finder before I snapped the shutter.

THE BOATHOUSE

THE CATCH

WIZZETTA BAY

Well, I got a few more books, read them carefully, and began to see that getting pictures of my fine catches of fish was not going to be as easy as I had thought. I would read a while and then try to make a picture. When they saw me going through the motions, my friends would ask how much I would charge for copies. This showed me that there was a field for my work if I could only make the pictures, so I read every book on the subject that I could get, reading some of them over the second time. Profiting by their instructions and what I learned by experimenting, I was getting so I could make pictures that were not only recognizable as to subject-matter, but fairly satisfactory to those who were venturesome enough to engage my services as a photographer. A part of this success was due to my learning that a "dark-room" in photographic practice was something more than the words might suggest to the lay mind.

But I was getting along swimmingly, feeling quite elated at finding that people would pay out real money for the pictures that I could produce. And while I was learning quite a little from the photographic magazines, I could see that my own work was not up to the standard of the pictures they showed. Of course, mine were better than some of the fuzzy ones, ones that could hardly be satisfactory to even my most easily satisfied customers, so I judged I was striking a very good average.

Then a friend of mine, a manufacturer of electrical goods, told me that if I had a larger camera and could do work that would pass inspection, he would gladly give me a lot of work at two dollars a plate with one print. My ambition swelled at once. The 4x5 no longer had sufficient scope, so I sold it to my brother-in-law for six dollars; I did not want it to get outside the family. He tried it for two weeks, duplicated my own first experiences and demanded his money back. Then I sold it again, this time for nine dollars, with the distinct understanding that it was to stay sold. I advertised for a second-hand camera, and a fellow brought me two the first day. One was a 5x7, the other a 6½x8½, both fitted with anastigmat lenses, and just what I wanted. The price was low, so I bought them; and when, next day, a fellow offered me more than twice what I had paid for them, I refused to sell, but did not overlook the suggested profitable field for the exercise of my knowledge of photographic equipment acquired through a close and painstaking study of all the catalogues I had been able to get hold of up to that time.

I have taken a number of pictures for my electrical manufacturing friend; and, while not one has as yet been accepted, he says that I "am improving", and

that helps wonderfully. I am a beginner, but I am going to get out of that class and into commercial photography just as fast as I can. If nerve and persistance, backed up by hard study, will get me there, the goal is in sight. I believe there is money in photography; I do not know just how much, but I like the work, and it gives one a chance to be about and out in the sun and air. I am not setting this all down as a record of a surprising success, but merely to show what one can accomplish in one year, using only his spare time and endowed with a willingness to study. It shows what an investment of three dollars and a half and a desire to get a fish picture will do. The two cameras that I have cost me nothing, as a result of buying and selling through the "Wanted" and "For Sale" columns of the daily papers, and the pictures I have sold have more than paid for all the material I have used. Yes, and paid me for much of the time spent, as well, although this last could hardly be charged against the business, for the reason that it was all more enjoyably spent than would have been the case with any other form of work or play. The few pictures herewith show some of my results, some of them at least good enough to sell, others bad, and perhaps all of them quite indifferent. But rest assured, that none of them were produced in an indifferent manner or greeted in an indifferent manner by their producer.

Most of my failures have been due to being in too great a hurry. From the very first I have wanted to snap pictures, often in such a hurry that I forgot to load my plateholder. Once I opened the holder in daylight to make sure it was loaded. The instructions on the plate boxes said: "Open in a dark room only", and advice from friends also helped me. My bathroom has solid brick walls with no windows, and I was told that, with a ruby light installed, I had an ideal dark-room. I only had to secure a two-way socket, one for red light, the other for white. I now keep my chemicals in another room, but I intend to install a cupboard for them; and the only other drawback is that when the bath business is good the photographic business must be postponed. At present I am using Tozol developer, and the tray method, employing it for both plates and papers. The stock solution is made up according to the formula on the bottle, diluting with water, one to seven for paper, and using the same for plates by adding a small amount of pyro, about what will lay on the point of a small pen-knife blade, to each eight ounces of the developer. This system of working was shown me by a friend.

From the library I secured the "Complete Self-Instruction Library of Practical Photography". The best results I have so far were with two developer formulas therein. Both are pyro formulas: the "Universal", is a quick worker; the "Special" very slow and fine for over-exposures; in fact, I find that I can safely over-expose a poorly lighted subject and yet get very good negatives by using it. I no longer waste time making snapshots. I always use a tripod if possible, and am learning to take my time; often going out to get some particular view, setting up my camera, studying it, only to decide that I will not waste a plate on the subject.

The prints herewith are sent along in order to allow of a few remarks concerning my work. Last winter the family made a raid on my collection of prints,

A KITCHEN INTERIOR

THE DINING-ROOM

and all those lacking a good shine were consigned to the furnace; which goes to prove we are not all of the same mind on photography. The picture of the boathouse is not my first, but my first good picture. The man by the boat, whom I later learned was a photographer, moved during the exposure; which goes to show that even the professional sometimes does not know enough to hold still. In the upper left-hand corner you will see some real smoke that came from a passing train that I tried to catch on the plate. There should have been some fish in the picture, but they were not biting that day. In the next are shown some good samples, taken a few days later, and please keep in mind this fact: the fish in the center belong to me. The end picture is the same lake from a different viewpoint. In printing this I held a card over the printing frame for a part of the time to protect the lower portion up to the shore-line opposite, in order to make it come out strong enough.

A leak in the bellows made these last two negatives a little foggy, but it was discovered later and repaired with black sticking plaster. I took a few buildings straight from the front, which I afterwards read was the wrong way, and that ended my outdoor work, winter coming on. As I wanted to get practice work during the winter, I made a few attempts at outside work, getting

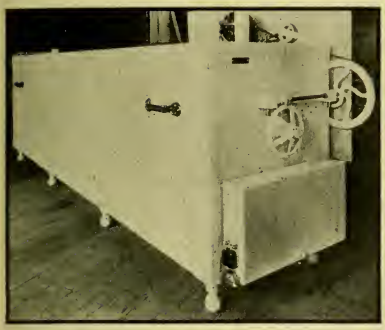
FROM ORIGINAL NEGATIVE

AFTER LOCAL REDUCTION

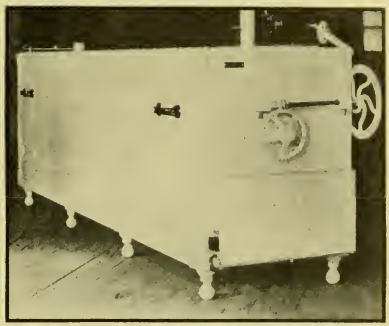
one picture that I needed, but not being used to hurrying the work, I nearly froze my fingers. I read up on copying, and decided I would try that. I also secured a small flash gun and read up on the subject of flashlight work. The first interior, that of the kitchen, is a combined flash and daylight exposure. I made three exposures and spoiled three plates before I got this. The difficulty was to get the focus right. The other was made with daylight alone, and shows the dining-room, where all my copying is done.

My second attempt at a flashlight procedure, and one for which I was to get real money, is the lunch counter interior. I took particular pains to have everything just right, so as to assure success. The floor was of tile, but I was prepared, having found an old tripod, and after sawing off about half the length of the legs, I cut notches, one inch apart, across the end of each stub. Spread out flat on the floor, this allowed the points of my tripod to fit into the notches, where they were kept from slipping about. When ready to print, the negative looked so good to me that I printed a half dozen. When I tried to deliver them, I was told they were "no good; no faces; no eyes". I wanted the money, they wanted the pictures, so I consulted my instruction and read until I came to where the book said that a negative too dense to print well could be greatly improved by the use of Farmer's reducer. I mixed up the formula, and, with the aid of a tuft of cotton on the end of a match, I reduced the faces and other dense parts. The other print shows the result secured from the same negative after the operation. The prints were satisfactory, the money paid; and, while I made very little on the deal, I learned one thing, and that was never to try and deliver a print until I was quite sure it was right. I also learned that the man who pays for the job is the final critic.

Seeing the negative come up in the developer, I felt sure I would make a hit with my electrical friend, who wanted a picture of his oven. I made a print, rushed up to his place and asked him how many he needed. He looked at the print and said: "That doesn't look like my oven. Look at the difference between the two ends". Well, he had to have a picture of the oven, as it was to be shipped next day and decided to have a regular photographer come up and make it. He suggested that I be on hand and see how a real commercial photographer acted. I was there, and there early, and this is what I saw: Mr. Commercial Photographer enters, and asks: "How do you want this oven taken?" He was told they wanted one side, one end, and a little of the top with the motor above. He set up his camera, took a small level and tried the oven two or three different ways, the same with the camera, which he moved twice as far back as I had mine, after removing the front half of his lens. He inserted a plateholder, drew out the slide, gave sixteen seconds exposure and was gone inside fifteen minutes. I had previously used two plates and some time to no avail, but this time I used up only fifteen minutes and learned something. That night I got a book on commercial work and read far into the night. I learned that some lenses were so made as to give three different focal lengths and three sizes of image. I set up my camera, pointed it at the light, measured the image on the groundglass, first with the whole lens, and then with each of the two halves. I discovered that the back half gave me a very large image



THE FIRST OVEN PICTURE



THE ONE MADE LATER

and long focal length, the front combination alone gave about half that focal length or about half again as long as the entire lens. I decided that my own lens was just what I needed, so next morning I was right on hand to get another chance at the same oven before it was shipped. I asked if I might try it again, and my friend said: "Sure! Go to it." The picture at the right shows the result. Had I put something behind the motor, as I did in the first picture, and raised my camera a little higher to get more of the top, my picture would have been just as good as the one made by the commercial photographer. The manufacturer and I are still good friends, and while he is a severe critic, I will get his money yet.

I know a few things about the use of stops, but still have a lot to learn. I know that commercial work should be sharp, and that is secured by stopping down and giving plenty of exposure. To tell about all my photograph troubles would take some space, but I am learning. If anybody that knows anything about photography comes to my place and gets away without giving me some information, they will have to be deaf, dumb and blind, and unable to write. If this article finds its way past the editor and into print, I will try again when I am better fitted to give my fellow readers some account of my work.

Art

Art is not a thing of spontaneous origin, but of slow and gradual, though constant growth, ever changing, with a tendency to advance from the simple to the complex; and, while we may study and compare its fluctuations in the past, and view the changes which it undergoes in the present, and speculate as to its beginnings, yet in nowise can we foretell what will be the end.—HENRY BALFOUR.

The laws of nature, if we extend to sufficient depth the meaning of the word, seem to provide that the individual only "attains" in so far as he serves his race, and those who are providing for the nurture of man's higher faculties surely serve as well as those who help to make it possible for a larger population to live in the same sordid vulgarity.—RALPH RADCLIFFE-WHITEHEAD.

Making Flashlight Groups

By L. C. Crossman

With an Illustration by the Author

Entirely too many flashlight groups are made with the faces given a flat front lighting that results in the loss of all roundness, a fault that is particularly objectionable should the negative happen to be slightly undertimed. This is due to firing the flash from directly behind the camera. When the flash is located more to the side, the photographer avoids the flat lighting but introduces another fault, that of an inky black shadow just back and to the opposite side of each head. In fact, the direct front lighting is often used for the purpose of avoiding these shadows, just as the shadows are sometimes invited in order to escape the flat lighting.

A much better plan is to use two flashes, fired simultaneously, and thus avoid both difficulties. In my own practice, when doing this class of work, I arrange to have the main flash well to the side, and another or secondary flash of about half the strength just back of and a little to the opposite side of the camera. The group picture herewith, a typical example of such work, will show the results. The lens, a wide angle one, for the 8x10 plate used, was stopped down to f-45, and a Standard Orthonon plate employed. The flashlight equipment was a simple two-unit Prosch Home Portrait one, without bags. One unit, using a half ounce D cartridge, was placed a few feet back from in front of the extreme right hand end of the group. The other, using a quarter-ounce D cartridge was placed just behind and a little to the left or opposite side of the camera. Not only does this dividing up of the light give a much better result, but less powder is actually required. Fired in one flash, at least one ounce would have been required to make this group with so small a stop.

Made in this way, there is an entire absence of the black and objectionable shadows behind each figure, and at the same time, there is avoided the equally or more objectionable lack of roundness and modeling in the faces. The individual heads being small in the picture prevents the good quality of lighting being obviously apparent, but comparing them as a whole, with faces making up a group taken with but one flash, and that directly behind the camera, the difference is quite marked. Any one of these small heads enlarged to suitable portrait size would show the lighting to be a near approach to that generally used in the making of ordinary bust pictures under the skylight.

I might add that in arranging the two flashes, one should bear in mind two things. The distance of the flash influences the amount or strength of the light, and the height of the flash is important. In taking the group herewith the larger flash, the half-ounce cartridge, was nearer to the group than the other, and therefore the division of the light was not in actual proportion to

YOUNG WOMEN'S CHRISTIAN ASSOCIATION GROUP By L. C. CROSSMAN

the size of the two cartridges. The figures at the extreme right of the group received somewhat more side illumination from the large flash at that end than from the smaller one back of the camera, while those at the left were favored with perhaps more light from the nearer and smaller flash than from the larger one opposite the other end. The best lighted of the heads are those directly in front of the camera where the distribution of the illumination was such as to give the strongest light from the side with just enough from the front to soften the shadows nicely on the opposite side. The other point to be observed is that the height of the flash should approach, as near as convenient, the distance of the flash from the subject; this giving an approach to the forty-five degree angle of the studio lighting. A third requisite is a hood on the lens to protect the front combination from the light of the flash at the side.

It may, perhaps, be advisable for me to also suggest that it does not pay to economize in powder. Over-exposure, which in this class of work is only another name for the use of too much powder, is a danger that need cause no anxiety. If one will try and recall a case in which he has made, or even seen a flashlight group showing any evidence of too much powder having been used, he will realize that the danger in that direction is slight. On the other hand, quite a large proportion of the group pictures made by flashlight show conclusively that they would have been much better had more powder been used, more exposure given. When we realize that the duration of a flash is only about one-twentieth of a second we can understand that the light required must be a strong one, one strong in actinic quality. As with the group in question, an exposure of one-twentieth of a second, the approximate duration of the flash, with a stop as small as f-45, means a very powerful light, and the picture secured speaks well for the wonderful actinic quality of a good flash powder.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

FLASHLIGHT FUSES: To make slow-burning fuses suitable for the ignition of flashpowder, dip blotting paper into a solution made up by dissolving a little saltpetre in warm water, drying it and then cutting it into strips. Another method, one which I have not tried, gives a faster-burning fuse. Potassium chlorate and antimony sulphide are to be powdered separately and sifted through muslin, afterwards taking equal parts of each and mixing with French polish to make a creamy paste that is spread on the blotting paper and allowed to dry without heat.—A. S. D., Florida.

CLEANING BOTTLES: Small shot shaken around in the bottle with some water and possibly a little soap, followed by a rinsing, is the common practice, but it is more expeditious to have some consideration for the particular kind of stain or dirt to be removed. If the bottle has contained varnish, one part of ammonia in ten parts of alcohol, followed by one part of ammonia in ten parts of water, ending with clear water alone, will prove effective. For greasy or oily solutions, use benzine, followed by a strong soda solution. For the ordinary photographic solutions, equal parts of hydrochloric acid and water will prove satisfactory.—H. J. K., Louisiana.

IRON RUST SPOTS: As I travel about the country doing my developing as I go, reddish brown spots, due to particles of iron in the water frequently cause considerable trouble. These are said to be hard to remove, and I have read the suggestion that hydrochloric acid be applied and then quickly washed off. My experience is that they are the easiest sort of defect to remove from a negative. All that is required is an immersion in a weak solution of sulphuric acid. There is no danger of the image or the gelatine being affected, so that it is merely a matter of allowing the plate to remain until the spots are removed.—W. E. R., Tennessee.

CLEARING OLD PYRO NEGATIVES: I recently required some prints from some old, well stained pyro negatives, ones that were so yellow that they not only required an impossible long time to print, but gave the most contrasty results, despite my best efforts and the softest paper obtainable. Then I tried a plan I remembered having read, that of coating the negative with a mixture of glycerine and very strong hypo solution and setting it aside for a couple of days, after which the plate is well washed and dried. This I tried with the best of success and pass it on for the benefit of others.—S. D. F., Georgia.

ENLARGING FROM COPY NEGATIVES: I find that by making a portion of the exposure with a small stop and the rest of it with the lens wide open, the grain, due to the paper of the original, is practically eliminated, and the slight softness achieved is more pleasing than otherwise.—T. F. C., Illinois.

CAMERA CRAFT

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The Passing of F. C. Beach

Frederick Converse Beach was a man of no small measure, a personality in whom power and potentiality were blended with gentleness and good fellowship. Modest and unassuming, his work and achievements made him known to thousands who esteemed him for his worth. He was the son of Alfred Ely Beach, who, with the original Munn, purchased the *Scientific American,* then but one year old, on July twenty-third, 1846. March twenty-seventh, 1848, a little over seventy years ago, F. C. Beach was born. He early took an active part in the business, and upon the death of his father in 1896, became secretary of the firm, a position held until his death.

Mr. Beach became actively interested in photography in 1864, and sixteen years later founded the New York Society of Amateur Photographers, now the Camera Club. In 1889 he founded the *American Amateur Photographer,* now *American Photography,* and although maintaining a keen interest in all photographic work throughout, his chief concern has been the Lantern Slide Interexchange, which he organized in 1885, and of which he was general manager up to the time of his death. The resolutions tendered by this body, should, in this connection, form a fitting commentary upon his passing over. They read:

On the Death of Frederick Converse Beach

"With our heads bowed in deep reverence and respect, and our hearts filled with sorrow and yet gratitude, for well do we know he has gone where life is no longer a struggle, where all things are beautiful and good; we, the friends and associates of the late Frederick Converse Beach, of New York, a man of both literary and scientific talents, takes this means of offering a just tribute to the memory of this co-worker this man who has meant so much to us all.

"We mourn for one who was most worthy of our respect and regard; one who was always willing, ready and most anxious to be of service to others; one who was charitable, in the true sense, in all his work of love, always cheerful without thought of self and of personal desires, and we believe this association was one in which he derived much pleasure and helpful recreation.

"By the death of this man, the community at large, as well as this association, has suffered an irreparable loss.

"It is, therefore, resolved by the members of the Board of Managers of the American Lantern Slide Interexchange, that this testimonial be sent to the various publications known to be in harmony with the work in which he was so active.

"W. H. Rau, Photographic Society of Philadelphia,
"H. W. Schonewolf, Buffalo Camera Club,
"S. S. Johnson, Orange Camera Club,
"O. C. Reiter, Photographic Section, Pittsburgh Academy of Science and Art."

A Patriotic Appeal to Lantern Slide Makers

J. A. Rawson, Jr., 347 Madison Avenue, New York City, who is connected with the National War Work Council of the Y. M. C. A., is interesting himself in collecting lantern slides for the entertainment of our soldiers in France, particularly those located in outlying sections where motion picture apparatus cannot

well be installed. The opportunity is one that should not be overlooked, and we trust that our readers, especially those who are members of the I. P. A. Lantern Slide Interchange, will kindly "do their bit" and help along this worthy cause by responding liberally and promptly.

An attempt will be made to make up a set of one hundred slides for this purpose, and the Director of the Eastern Division of the I. P. A. Lantern Slide Interchange, Arthur H. Farrow, 51 Richelieu Terrace, Newark, New Jersey, has undertaken to look after this work. If each worker will send Mr. Farrow a few slides, success is assured. Prompt action is essential. The slides should be as interesting as possible, and it is desired that they should be accompanied by titles, and where possible, a few words of description, to be later made up in the form of a lecture.

We are confident that all of our readers who are lantern slide makers will avail themselves of this opportunity to help the boys, who are "over there" fighting our battle for liberty, and we can assure them that Mr. Farrow will do his part in the most thorough manner.

Photographs Sought to Aid War

The War Department desires photographs, drawings and descriptions of bridges, buildings, towns and localities now occupied by the German forces in France, Belgium and Luxembourg, and likewise in that part of Germany lying west of the line running north and south through Hamburg.

At the request of the War Department and the Council of National Defense the association asks you to secure all possible material of this character. This may be sent without sorting or without any attempt to avoid duplication. It will not be practicable to return the material to the contributors.

All such material should be sent by parcels post or express to Colonel A. B. Coxe, 1156 15th Street, Washington, D. C.

A. Horsley Hinton, writing in *Camera Notes,* says: Art, whatever that means, employed to express her inspirations, may have many phases, many moods. There may even seem many degrees of perfection, according to the power of him whom the gods have chosen to carry out the thought that began with them. But that which is produced is either artistic or it is not. There should be no middle stage called pictorial, in which to rest content, because the object of the picture is to accomplish the artistic, and to stop short is to acknowledge incompetence and defeat.

I submit that it is arbitrary and unwarrantable to say that in producing, not a specimen of photography, but a picture by the application of photographic means a man may employ lead pencil to retouch the shadows, or he may increase density by chemical deposits on the film; but he may not use the black lead pencil or brush in any other way, nor increase density by using tracing paper or paint, or anything else.

The end in view, namely, a picture, justifies any means being employed; *the end attained* confirms the justification after they have been used.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D.

Are Lenses Fairly Marked?

When a photographer buys an expensive lens instead of a cheap one, the quality for which he pays the extra price is, in most cases, rapidity. A lens that will define at f-5.6 as well as another at f-16 is worth ten or twenty times as much; and in photographic lenses the one great direction in which improvement has taken place has been in aperture. It is, therefore, an important thing to know that the marking on the diaphragm is correct; and that one is actually getting what one is paying for.

Some buyers take the rapidity on trust; but many others attempt to check the makers' graduation, and not uncommonly find that, according to their own measurements, the maker has overstated the aperture. In a year we receive at least a dozen, possibly a score or more, complaints that a lens bought, say, to work at f-6.5 is actually not faster than f-7, if as fast: and when this is the outcome of the test, the photographer naturally thinks that he has been "stung".

To prevent any chance of misunderstanding, we will point out at once that we believe that such a practice as this suggests is not at all common, even with lenses bearing no responsible name: of course, those that have the marks of any of the celebrated manufacturers are beyond suspicion. But even with unnamed lenses, where if anywhere such a practice might be expected to show itself now and again, it cannot be common. We have tested or have seen tested a very great number of photographic lenses of all kinds and from many sources: and the instances in which their rapidity was grossly overstated have been extremely few. With at the most half a dozen exceptions, the difference between the real and the marked aperture has been quite trifling, and it has just as often been against the manufacturer as with him. In fact, if we might make a guess, we should say that, in the case of low-priced lenses, the maker settles on his type and his aperture, makes and graduates his iris diaphragms all alike, and then grinds his glasses so that they average the required focus: and any variations from the markings are due to the inevitable slight variations in focus of the individual lenses.

If commercial lenses generally are fairly graduated, someone will ask how comes it that the buyer so often finds the f- number of the aperture to be less than it is marked?

The explanation is that the rough and ready way of finding the f- number generally employed, while it is near enough in its results for determining exposure, is not reliable enough to be used to check the marking on the stops. The photographer measures the focus of his lens with more or less accuracy, measures the diameter of the stop opening, divides one by the other, and so gets the f- number. With all the ordinary forms of photographic lens, almost without exception, the "effective aperture" of the stop is larger than the actual opening; and that being the case, since it is the effective aperture which determines the f- number, the rough and ready way makes the f- number too high; that is to say, it makes out that the lens is slower than it really is. If we are to test the accuracy of the maker's markings to any purpose, we must be careful both to ascertain the effective aperture of each diaphragm opening, and also to measure the focus accurately.

The usual way of finding the effective aperture is to focus the lens for infinity, and then to replace the focusing screen by an opaque card with a small hole in the center of it. The camera being taken into the dark-room, a circle of bromide paper is placed upon the front of the lens and protected from light with the lens cap or in some similar way. Then, the stop to be measured being put in the lens, or the iris set, a candle is held for a few moments just outside the hole in the card. On developing the bromide paper it will be found

to bear a circular black patch, which will usually be a little larger than the actual opening in the stop, and represents the effective aperture. If we wish to do so, we can make a series of such exposures, and in this way get a record of each of the stops.

The diameter of the black patch is the dimension we require, and we must divide the focal length by it to obtain the f- number; but to do so accurately enough for our present purpose we must know the precise focus.

It is not sufficient to focus some distant object, and then to measure from the groundglass to the diaphragm, as is sometimes done. This may be near enough to satisfy the requirements of exposure problems, although it is a little rough and ready even for that purpose. The various types differ very greatly in the position of the nodal point, which is that to which the measurement has to be made, relatively to the stop. One of the methods which have been described in our back numbers must be used; two of those which are available read as follows:

Focus some object, so that the image on the groundglass is the same size as the original. When this has been done, we measure the distance from the groundglass to the original, and divide that distance by four, to get the focus. Thus, if we set up a strip of white card three inches wide on a black surface, so as to make an object easily definable on the screen, and focus it so that the image of the strip on the screen is exactly three inches wide also, and then find by measurement that the card is distant exactly twenty-one inches from the groundglass, we know that the focus of the lens is five and a quarter inches, since five and a quarter is one-fourth of twenty-one inches.

Another rule is to divide the greater conjugate by the ratio, plus one. For instance, we may focus some object quite sharply, and find that, while the object is four feet high, its image on the screen is three inches high. As four feet is sixteen times three inches, the ratio is sixteen. If we then find that the object is ten feet (one hundred and twenty inches) from the lens when its image is on this scale, all we do is to divide one hundred and twenty by sixteen, plus one, that is to say, by seventeen. The result is seven and one-seventeenth; so that we learn that the lens in use has a focus very slightly over seven inches.—R. C. B., in *Photography*.

Some Advantages of Slow Plates

We often wonder why slow plates and certain advantages that they offer are so consistenly overlooked by the photographer. Many workers do not realize in their estimate of plate qualities that in many branches of work, speed, although of great value for many subjects, is not by any means the chief factor deserving of consideration; indeed, there may be times when this instead of being of service becomes distinctly the reverse, and it is in the hope of setting forth some of the valuable qualities of the slow or medium speeded plate that these notes are penned.

In the first place it will be readily realized that as a general rule, apart from hand-camera work, the question of a plate having a speed of 500 H. and D. or only 90 or 100 disappears when the camera is supported on a stand and a time exposure is to be given. Of course this does not apply to the exposures in very dark interiors, or to the portraiture of babies, but we refer to general outdoor work. In this the slower speed of the plate may actually be an advantage as bringing the exposure into more easily managed limits, and avoiding disturbing the carefully focused image by excessive stopping down.

Then we may reasonably allow ourselves a much more abundant light in the darkroom without consequent fear of fogging the plate, provided that it is not held too close or otherwise unduly exposed to the rays from the lamp. The comfort of this, quite apart from the photographic side, is a great inducement to many workers to use plates of a slower speed.

A slow plate may be also relied upon to give a very fine range of tones, and also a greater contrast and longer scale of gradation, than is the case of a more rapid emulsion. This may be probably traced to the fact that while with the rapid plate we look only to give the minimum exposure that will produce a good negative, with a slow or medium grade an exposure that is decidedly on the "full" side is needed to give the best negative. To this cause may also be traced the fact that slow plates invariably give a better color rendering. With a rapid exposure upon a fast plate, for instance, such a color as red does not get time to impress itself fully upon the emulsion; but in the

case of a slower or medium plate, where a more generous exposure is given, a better relative color rendering in nearly all cases is the result.

"Fine grain" is another attribute of the slower-speed plate that is by no means as fully appreciated as it ought to be by the majority of workers who enlarge their results. Fine grain the fastest plate may have, but it will not compare in this direction with that of a more medium speed, and it is certain that a negative upon a fine-grained "ordinary" or "medium" plate will stand a very great deal more enlarging than would one from a briefly exposed speedy plate. To those who have not looked at the slow plate from this point of view, and who have been troubled with this defect, it is certain this quality will come as a revelation.

"Latitude" is a much vaunted and highly desirable feature frequently advertised in connection with the modern ultra-fast plate, but here again it is certain that in this direction no comparison is possible when we consider the fact that the slow plate has decidedly more claim to this quality than has its more speedy brother.

There is just one point that must of necessity be observed by the user of a slow plate for the first time, and that is, development must not be carried too far. The worker will be probably surprised at the increased contrast of his negative, and as a precautionary measure will do well either to develop by time, noting the fact that these plates will come in a different group, if he is in the habit of using a time and temperature table, from those of a higher speed, or if he develops by the dish method and decides when vision indicates that the operation has gone far enough, he will do well to dilute his normal solution with its own bulk of water, or in the case of a pyro developer to use only half the normal quantity of "No. 1". With slow plates overdevelopment is the one fault to be guarded against.

Another point that it may be well to draw attention to here, is that many amateurs fail, in both outdoor and indoor photography, by giving too brief an exposure—even with rapid plates. This in a measure accounts for many of the hard, unsympathetic results that are seen. Those who try slow plates for the first time, after a course of fast plates, should remember that attention to the exposure is a matter of prime importance. A fully exposed, fully developed negative, made on a slow, well-coated plate, gives a result that would surprise the habitual snapshotter with ultra-rapid plates.

The old-time text book writer advised the novice to start operations with a stand camera and slow plates, and this advice was most sound, as evidenced by the foregoing, by which we have endeavored to show that slow plates are, for the reasons given, actually easier to work than fast, and though not suited for speedy hand-camera work, for the stand camera, when a color-sensitive plate is not needed, they are the ones to be chosen.—*Amateur Photographer.*

A Special Problem In Depth

With regard to depth there continually arise questions, some few of which concern somewhat unusual conditions, requiring a knowledge of points not always understood. Numerous published formulæ and tables enable one to calculate the depth given by a given lens with a certain stop, but, occasionally, the reverse problem crops up, and we have to find out what stop is required to produce a given depth. The same tables may serve for this query, but if the conditions require an abnormally small stop, or a lens of out-of-the-way focal length, they may not afford any useful information at all. Sometimes it is essential to make photographs under quite abnormal conditions that in the ordinary way we should avoid most carefully, and then it becomes necessary to be able to calculate out results, not shown in any tables, and most probably to use formulæ that are not often published.

We will take the following assumed case. Suppose a small object of considerable depth is to be photographed direct on a fairly large scale. It is obvious that we then have to deal with a very near subject of great depth and the difficulties involved are peculiar. Rare as such cases may be, they nevertheless have to be dealt with at times, and so it is as well to be prepared for them. It is somewhat troublesome to set up the camera and make trials direct, because the stop required will generally be much smaller than any provided. A temporary stop will have to be made, and it is much quicker to calculate out the approximate size required than to attempt to arrive at it by trial and error.

To avoid having to use a stop smaller than is necessary the first thing to be done is to ascertain the right distance on which to focus. Three distances are involved: that from the lens to the nearest part of the object, that from the lens to the most distant part, and then the distance of the plane upon which we should focus sharply. The third distance is, of course, an intermediate one, but the plane on which we should focus is by no means halfway between the nearest and farthest parts of the object, though it is often assumed to be. It is really only a relatively short distance beyond the nearest part of the object. It is quite easily found, for, in mathematical language, the middle distance is the harmonic mean between the other two, which means that it is equal to twice their product divided by their sum. Suppose, for example, the near point is three feet from the lens and the far point five feet. Then the distance on which we should focus is the harmonic mean between three and five, which equals

$$\frac{2 \times 3 \times 5}{3 + 5} = 3\tfrac{3}{4}, \text{ so that}$$

we should focus on a distance of three feet nine inches, or only nine inches beyond the nearest point. This extra distance must be noted, as it comes in when calculating the stop to be used.

Now we want the aperture, which can be expressed either in the form of the f- number or by the diameter. The following are the data that we require:

$f =$ the focal length, which we may assume to be eight inches.

$b =$ The distance of the plane in sharp focus beyond the nearest point of the object. This we have already found to be nine inches.

$u =$ The distance from lens to nearest part of object, which we have taken at three feet or thirty-six inches.

$d =$ The distance from the plane in sharp focus, not to the lens, but to the front principal focus of the lens, that is to a point one focal length in advance of it. We have already found the distance from the lens to be three feet nine inches, therefore the distance now wanted is three feet nine inches less eight inches, which equals three feet one inch or thirty-seven inches.

Finally, we must decide on the amount of confusion to be allowed in the image. It is very usual to take this as one-one-hundredth of an inch, but in practice this is too much, certainly in a case like the present, where good focus is desired. It is therefore best to allow only one-two-hundredth or one-two-hundred-and-fiftieth of an inch. We will take the former.

Having these data the f- number is equal to

$$200\, f^2 \frac{b}{u\, d}$$

which in our assumed case equals

$$\frac{200 \times 64 \times 9}{36 \times 37} \quad \text{i. e., f-86.5}$$

If we prefer to get the diameter of the stop, which is generally more convenient, we use the following formula:

$$\frac{u\, d}{200\, f\, b} = \frac{36 \times 37}{200 \times 8 \times 9} = .0925 \text{ inches.}$$

what we may call one-eleventh of an inch.

Such a stop will have to be made, as it is certain the lens will not be provided with it, but very good temporary stops can be easily made in opaque black paper. Card is too thick; the best way to proceed is to cut a ring in card that will fit the lens, then paste black paper over it and in that cut out the stop aperture. Such a stop can be fitted without much difficulty to any lens.—*British Journal of Photography.*

A New Photometer For Measuring Negative Densities

The photometer was described by F. F. Renwick at the last meeting of the Royal Photographic Society as being second only, if indeed second at all, to the chemical balance, in the important part it would play in the future development of photography. No work in which questions of density figured, he said, ought now to be published without accurate quantitative data based on photometric measurements. However many times the practical man, with his dicta on all kinds of photographic subjects, might be right, there was a rather large percentage of times when he was wrong, simply because he was dependent on inaccurate eye judgments.

Mr. Renwick, with W. B. Ferguson and D. E. Benson, has elaborated a new form of photometer to meet the requirements, not only of works practice, but of amateurs who are interested in photography on its more serious side. The new photometer is based on the law of inverse squares, which means that it depends on accurate measurements of distance between light source and illuminated

object. Electricity is used as the source of light, and for comparisons the familiar combination of prisms known as the Lummer-Brodhun "optical cube" has been adopted. The instrument has advantages in point of convenience over the Schmidt and Haensch photometer, which until recently was the only form of photometer existing with any reputation. The range of the instrument can be carried as high as two and eight-tenths, and for by far the greatest proportion of ordinary photographic measurements a range approaching this is more than sufficient to cover all requirements. The photometer, it is hoped, will presently embody a "Pointolite" lamp, and with this point source of light of small size, which is the great thing in a photometer of this kind, it will be an easy matter to read densities up to four. The photometer will also take a quarter-plate or even a half-plate as it is, without the necessity of cutting into narrow strips.

An attempt is also being made, which promises to be successful, to provide the instrument with an attachment which will enable reflection densities to be measured, as in the case of bromide and gaslight papers, as well as densities to be viewed by transmitted light, as in the case of the ordinary negative.

The makers of the instrument were highly congratulated upon the results of their labors, and one speaker, who said that he had made a great many thousands of density measurements, thought the new photometer more convenient and more easily worked, with less eye strain and with greater accuracy, than any other he had encountered.—*Amateur Photographer.*

A Retouching Note

Possibly few workers realize that for the purpose of adding pencil work upon the film side of negatives they would have a difficulty in finding the equal of the "indelible" or copying-ink pencil. It will be found that this tool will leave a very fine deposit after a light touch, of a far less "grainy" texture than is the case when the ordinary black-lead and retouching medium are used, and the latter often has a tendency to spoil the fine surface of the negative, which becomes noticeable after overmuch enlarging. With the indelible pencil just described there is none of this, as retouching medium is not needed, and a far lighter touch is necessary. One point should be noted: any deposit is exceedingly difficult of removal, and so when once applied had better be left alone. The writer has used the indelible pencil for all his retouching recently, and found it, with care, a most valuable tool. It may also be used for spotting purple-toned printing-out paper, and as the color is so near to that of the print the work is hardly noticeable. We have also used it for spotting out pinholes in negatives, as follows: the point of the pencil is very slightly damped, and the pinhole is then just touched. The transparency of the hole will be found to disappear, leaving it of the same density as the rest of the negative. The pencil should not be too wet, or too much spotting will be put on the negative. It should be damped with an oddment of flannel just damp with water.—R. M. F. in *Amateur Photographer.*

Developers For Over-Exposures

N. E. Luboshez had some interesting remarks to make on the subject of development in the course of his recent lecture at the Royal Photographic Society. In the case of a plate which had been over-exposed or in which the subject was of such contrast that a portion of it must necessarily receive an undue impression, he said that there were developers which were more suitable for dealing with this condition than others. Some developers spread themselves, sponge-like, in the gelatine, and these were to be avoided. Other developers acted very energetically on the surface of the film but did not penetrate so much into its depth, and with developers of this kind it was possible to minimize the effect resulting from over-exposure. Developers like pyro and oxalate of potash had this tendency to keep the surface of the whole gelatine more together and harder, and they had in this respect the prefence over other developers which swelled the gelatine.—*Amateur Photographer.*

Stale Plates

Now that plates have reached such a high price, photographers are naturally more disposed to make the most of any odd plates or old stock they may have by them. Probably by reason of unsuitable storage, rather than age, the plates may be defective, giving flat and foggy results, and showing irridescent stains extending inwards from the edges. In cases where a negative rather

harder than is usually desirable is not detrimental, such plates can often be used to good advantage. The first step is to give at least double the exposure that would be given to a fresh plate. The next is to make up a small quantity of solution containing two grains each of potassium bromide and potassium bichromate to each ounce of water. Before applying the developer to the plate, it is flooded with sufficient water to cover it, to each ounce of which has been added about five minims of the restraining solution. This is allowed to act for a minute or two, and then added to the developer, which is then flowed over the plate in the usual way. The developing action is, of course, considerably retarded, but the resulting negative should be clear and free from fog, although more contrasty than in normal conditions. The staler the plate the longer must be the exposure, and the stronger the restrainer, but this again results in an increase of hardness and contrast, so that the method in its extreme form is only suitable for such cases as copying.—*Photography.*

Mirror Portraits

We were recently inspecting a number of portraits by different workers, among which were several which showed the reflection of the sitter in a mirror, as well as the direct image. In some instances the results were quite pleasing, but in others the poor show made by the reflection quite spoiled the effect of the composition. Mention of a few points on which mistakes were made may save others who essay this style of work from committing the same errors. One is connected with focusing and the lens aperture. It must not be forgotten that the reflected image is not on the plane of the silvered surface of the mirror, but as far behind it as the real object is in front of it, therefore the focus must be "divided" so as to secure as even a degree of definition throughout as may be desired, a much smaller aperture being necessary than when the figure alone is taken. For the same reason the sitter must not be too far from the mirror. If that is so, not only will the aperture have to be reduced till a long exposure is necessary, but the reflection will appear too small. This is especially the case if the lens is of rather short focal length. Another difficulty is to be found in the lighting. Very often the lighting which is most suitable for the figure is not so for the reflection, or vice versa; where a full face and profile are to be shown it is usually advisable to let the profile appear in the mirror. Care must be taken not to allow a strong reflected light from the mirror to spoil the lighting of the face. Finally, the pose must be such that both images appear graceful and well balanced, both individually and in combination. The mirror worker must place himself in the position of the sculptor, whose work to be successful must bear inspection from any point of view. Generally speaking, the mirror should be kept vertical, except when heads are taken, when a slight inclination may be advantageous.—*British Journal of Photography.*

Soft-Focus Work

Too many portraitists who have been tempted to attempt soft-focus portraiture have been discouraged by the fuzzy results obtained, and have given up at a very early stage, owing not only to a lack of perseverance, but to a want of knowledge of the properties of their lenses. The essential point to be grasped is that in most soft-focus lenses the effect is obtained by the employment of both spherical and chromatic aberrations; consequently the degree of sharpness in the print will not correspond with that observed upon the focusing screen. As a rule the chromatic aberration is of the "positive" variety, and the point of sharpest definition for the most actinic rays lies appreciably in front of the focal plane of the visual image; or, to give an example, if the eye of a sitter be focused, taking, say, a four-inch head, the points of sharpest focus in the negative would be a little in front of the tip of the nose, the eye being less sharp than upon the groundglass, while the ears are worse still. If the focus be adjusted upon a printed card held opposite the opening of the ear, the definition falls into its proper planes, and the result is infinitely better. This adjustment is not necessary when using single achromatic lenses, such as the front combination of portrait lenses or old landscape lenses used at full aperture, but these give a different type of diffusion from such as the Bergheim, Portland, or Pulligny lenses, with all of which this correction is necessary.—*British Journal of Photography.*

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Reducing Bromide Prints

It hardly pays to reduce a bromide print of small size, say a 8x10 or smaller, if the negative is at hand and a new print can be made. On the other hand, a large print uses up some paper, which costs money; and again, one may be down to his last sheet of paper and not be in a position to replenish the supply at the moment. Still further, a print made a little too strong and then reduced has a peculiar quality of its own that, once noticed, may appeal to the worker as just the effect he requires for a print from a certain negative. The reducer is made as follows: Dissolve a quarter of an ounce of iodide of potassium in ten ounces of water and then add four grains of iodine, forming a stock solution that keeps well. To use take an ounce of this stock solution to every ten ounces of water and immerse the print until black all over; rinse quickly in clear water and then immerse in a fresh hypo bath of the ordinary strength. The print clears up, becomes much lighter, and requires only the usual washing that follows fixing. If the solution works too fast, use fifteen or even twenty ounces of water to each ounce of the stock solution in compounding the working bath.

Transferring Prints To Glass

Give the glass a coating of turpentine oil and canada balsam, half and half, or else one of dammar varnish, and then set side to become "tacky", if we may use that word, this last taking six or more hours, depending upon the dryness of the atmosphere. Then soak the print in soft water until thoroughly wet and limp, remove the surplus or surface water with a lintless blotter and carefully lay in position on the prepared glass, pressing into place with another blotter to make sure that no water or. air bubbles are confined beneath. Put aside to become thoroughly dry, which will take perhaps a day or two. Then with the wetted fingers proceed to carefully rub off the paper, leaving only the film carrying the picture attached to the varnished surface of the glass. A little practice and one will find that this last is not at all difficult if a good grade of printing-out paper is used for the print, and with developing paper the work is only made a little more difficult because of the added thickness of the stock. After the paper is rubbed away a coating of transparent varnish adds to the appearance and transparency of the work. The same process can be used to transfer prints to opaque surfaces, such as box lids and the like, but of course the picture is reversed through being applied to the surface face down.

Exposure With Ray Filter

A California correspondent wants to know how he can determine the increase in exposure necessary with a set of ray filters that have fallen into his possession, without going to the trouble of an extended series of experiments. There is really no very good way to determine the matter. I think it would be safe to assume that the lightest of the series increases the exposure about three times, and then with a few experimental exposures, determine if this is the case. Then, using this filter as a key, see how long it takes for a certain light to just tint a piece of Solio paper beneath it. Then try the others in the same way and the relationship between these times should be about the same as those between the exposures required for plates behind the filters. This is for the average orthochromatic plate. Ray filters as a rule, lengthen the exposure necessary on ordinary plates many more times than is the case with the color sensitive ones, hence the necessity of using one of the filters as having a known amount of lengthening effect. Were this not so one could test them all with the paper, and so arrive at a comparison with the time required for the unscreened paper, the latter time representing

the unscreened plate. To get the first tint, cover up a portion of the paper coming under the filter and watch for the line of demarcation that will show as the covering strip is raised. If an exposure meter of the paper-tinting kind is at hand, that can be used in making the tests.

Fumes That Are Detrimental

An Indiana subscriber writes to ask if the fumes of the chemicals or chemical solutions used in photography are injurious to health. It would hardly be possible to answer the question fully, because there are so many chemicals that are occasionally recommended for photographic use, yet can hardly be called photographic ones. The fumes of sulphuric and nitric acids are injurious, and those of formaline may set up an irritation of the throat. Ammonia gives off fumes that are obnoxious, but hardly dangerous. The fumes of acetic acid are harmless, and the most of those solutions having an offensive odor are alike innocent. Careless handling of bichloride of mercury may result in dust that, if inhaled, would cause serious trouble, as it is a strong corrosive poison. Caustic soda would be irritating in the same way, but not dangerous as a poison. It is rare indeed that a formula containing a chemical so dangerous as to require care in the matter of fumes is published without the proper caution, that I think our correspondent need have no fear, particularly in using the chemicals and solutions ordinarily employed in photography.

Impervious Corks

The often-published advice to soak corks in hot parafine wax is not as satisfactory as it would at first seem. The corks do not absorb any great amount of the wax and the coating on the outside seems to rub off. A better proceedure is as follows, one recommended to us by a photographic chemist who has given it a thorough trial. The dry corks are smoothed up with sandpaper, if necessary, and then placed in a bath made up by adding ninety grains of gelatine and an ounce of glycerine to eight ounces of water. This bath should be kept at about one hundred and twenty degrees Fahrenheit during an immersion of the corks of about twenty minutes. From this the corks go into a bath of cold water for rinsing, after which they are first dried and then immersed in another bath, kept warm enough to be liquid, composed of eight ounces of parafine wax and two ounces of vaseline. This last must not be heated any more than is necessary or the coating will not be satisfactory.

Clearing Stained Negatives

About as good a clearing bath as one can use for stained negatives, the kind that come out of the pyro or hydroquinone developer with too rich a yellow color, is the acid-alum one. Simply dissolve sixty grains of powdered alum in twenty ounces of water and then add one dram of sulphuric acid. Immerse the negative for a few minutes, remove, wash and dry. Spots caused by iron in the water, reddish looking spots with irregular outline, will succumb to the sulphuric acid and water alone, perhaps made about twice as strong as advised above. Do not put the acid in the graduate and then pour on the water; it may shoot out and cause trouble. Pour the acid slowly into the water, stirring meanwhile.

Rubbing Down Negatives

Equal parts of powdered rosin and finely ground cuttlefish bone is excellent for rubbing down the over-dense parts of a negative. All that is required for its application is the tip of the finger, and a circular motion should be given in rubbing, when the space is large enough to permit. In cases where the part to be reduced is too small a paper stump, or even the point of a match or tooth-pick is used for applying the erasive action of the powder, when a back-and-forth motion will answer. Only a little practice is required to enable one to greatly improve such negatives as are uneven or unsatisfactory as regards the density of certain parts.

Mounting Glossy Prints

Take one ounce of formaline to every twenty ounces of water and soak the prints therein for four or five minutes, wash in two or three changes of water and then squeegee onto the ferrotype plates. One will find that they will not only strip from the plates better, but they will stand the ordinary method of flour paste mounting without the glossy surface becoming dull.

INTERNATIONAL PHOTOGRAPHIC ASSOCIATION

Officers of the I. P. A.

F. B. Hinman, President, 1369 South Washington St., Denver, Colo.

J. H. Winchell, Chief Album Director, R. F. D. No. 2, Painesville, Ohio.

Fayette J. Clute, General Secretary, 413-415 Claus Spreckels Building, San Francisco.

Answers to inquiries concerning membership and membership blanks will be supplied by the State secretaries. Album directors are at present acting as State secretaries in such of their respective States as have as yet no secretaries.

John Bieseman, Director Post Card Division, Hemlock, Ohio.

James B. Warner, Director Stereoscopic Division, 413-415 Claus Spreckels Building, San Francisco.

NOTE.—All stereoscopic slides sent to Director for the circulating sets must be mounted, titled, and show the maker's name and I. P. A. number on the back of mount. Notify the Director how many mounts can be used, and a supply will be sent you by return mail.

Arthur H. Farrow, Director Eastern Lantern Slide Division, 51 Richelieu Terrace, Newark, N. J.

A. E. Davies, Director Western Lantern Slide Division, 1327 Grove St., Berkeley, Cal.

STATE SECRETARIES

California—A. E. Davies, 1327 Grove St., Berkeley.

Idaho—Eugene Clifford, 902 9th Avenue, Lewiston.

Iowa—Harry B. Nolte, Algona.

Kansas—H. H. Gill, Hays City.

Mississippi—George W. Askew, Jr., 211 34th Ave., Meridian.

Missouri—J. F. Peters, Room 210 Union Station, St. Louis.

New York—Louis R. Murray, 21 Clark St., Ogdensburg.

Oregon—F. L. Derby, La Fayette.

Texas—Emmett L. Lovett, care Southern Electric Company of Texas, Wichita Falls.

Wisconsin—F. W. Freitag, 500 Monument Square, Racine.

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Iowa—C. W. Parker, Mapleton.

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Missouri—Wharton Schooler, R. F. D. No. 2, Eolia.

New Hampshire—Mrs. A. Leonora Kellogg, Box 224, Londonderry.

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Utah—John C. Swenson, A. B., Provo.

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NEW MEMBERS

4498—Edwards H. Smith, 302 Park Ave., Beaver Dam, Wis.
Class 2.

4499—Fidel Salazar, Box 116, Rio Hondo, Texas.
2¼x3¼ to 3¼x5½, contact prints and enlargements up to 5x7, various papers, of miscellaneous subjects, birds, children, farm subjects, plants, etc.; for the same and landscapes. Class 1.

4500—John Hammond Reed, Yungchowfu, Hunan, China.
Class 2.

4501—F. A. Leitao, care Soconoy, Shanghai, North China.
Class 3.

RENEWALS

3414—F. D. Campbell, M. D., Coal Grove, Ohio.
Class 2.

4049—Robert S. Blatchford, Magdalena, New Mexico.
Class 2.

4374—F. K. Caswell, Box 40, R. F. D. No. 2, San Gabriel, Cal.
Class 2.

4389—Otto C. Perry, 1917 South Fox St., Denver, Colo.
3½x3½ and 3¼x5½, various papers, of locomotives, speed subjects and a few scenes; for the same. Class 1.

CHANGES OF ADDRESS

1213—A. B. Davis, 212 Parkview Avenue, Detroit, Mich.
(Was 335 Parkview Avenue.)

2984—C. M. Seymour, 346 Park Road, West Hartford, Conn.
(Was 1186 Park St.)
4275—Albin Jacobson, 654 Burnell St., Winnipeg, Man., Canada.
(Was Howardville, Canada.)
4388—Walter Swetnam, Bishop, Ga.
(Was Whitesburg, Ga.)
4166—Ernest Smith, 1135½ Albina Ave., Portland, Or.
(Was Ford City, Mo.)
4410—F. J. Davis, Big Rock, Ill.
(Was Connellsville, Pa.)
4418—W. S. Wilgus, 523 Brinkerhoff, Ave., Santa Barbara, Cal.
(Was Tucson, Ariz.)
4480—Louis Jay Gerson, editor "Opera News", 784 Broadway, New York City.
(Was Palisades, N. Y.)

CLUB NEWS AND NOTES

Club Secretaries and others will oblige by sending us reports for this Department

California Camera Club

An interesting chronological exhibition of portraiture for the past seventy years, 1848 to 1918, is being shown at the rooms. Starting with the Daguerreotype, the series closes with the latest in the art of portraiture, recent examples of club members' work. There will also be an exhibition by the Club Pictorialists on the walls this month.

Lagunitas, in the beautiful foothills of Marin County, was the scene of the regular camera outing; and, like all these outings, it resulted in many negatives of choice bits of landscape that are too often overlooked by the ordinary tourist.

The Yosemite outing was so successful and the demand for another of a similar character so insistent as to cause the Outing Committee to make arrangements for another ten-day one in August. The trip will be to Lake County, taking in The Geysers, Calistoga and Clear Lake, en route.

The chairman of the Lantern Slide Committee has made arrangements for demonstrations covering the various steps in the work. These will include the details of making slides both by contact and reduction, as well as the proper method of masking and binding them.

Several members visited the club during the month for the purpose of receiving instructions in the making of bromide enlargements. All were extremely pleased with the pains taken by the instructors who volunteered their services in making them thoroughly grounded in the subject.

OUR BOOK SHELVES

"How To Make Lantern Slides"

This informative little book, just out, is the seventh member of the well known and popular "Practical Photography" series. It is edited by Frank R. Fraprie, S. M., F. R. P. S., and like its companion manuals, is complete and full in its treatment of the subject with which it deals. A generous number of practical formulas, covering every possible phrase of the work are given, and the reader is told just how to take each step in the production of a perfect lantern slide. In fact, several alternatives are described for practically each part of the work. Published by the American Photographic Publishing Company, 221 Columbus Avenue, Boston. Price, paper covers, thirty-five cents; cloth binding, seventy-five cents.

"Optics For Photographers"

This is a neat, cloth bound book of over two hundred pages and some fifty-seven illustrations, the subject matter dealing most thoroughly with that perplexing part of photography, that having to do with the lens and its optical properties. The particular behavior of all types of photographic lenses is explained, together with a discussion of their respective good qualities and their individual defects. Published by the American Photographic Publishing Company, 221 Columbus Avenue, Boston. Price two dollars.

"Sunset Canada"

Archie Bell, who gave us that charming "Spell of the Holy Land", as well as several others of the "Spell Series", has, in "Sunset Canada, British Columbia and Beyond", given us an alike enjoyable addition to the "See America First" series of the Page Company. The book itself is a handsome one of over three hundred pages, interspersed with over fifty beautiful full page illustrations, several of them in full colors, together with a comprehensive map, all between beautiful covers in gold and color decorations. The book, of course, while characterized by Mr. Bell's intimate and appreciative style, a style that adds charm to that which too often lacks interest, is full of information of just that kind that the intended tourist or former visitor most keenly absorbs. And, while the romantic quality that the subject justifies has been retained, the historical and descriptive side has been given the most careful attention, as attested by the bibliography published at the end, one made up of about one hundred titles. All in all, the book is a charming one, a credit alike to its author and its publishers, the Page Company, 53 Beacon Street, Boston. Price three dollars and fifty cents; carriage paid, thirty-five cents extra.

"Injurious Insects and Useful Birds"

This, the latest of the well known and deservedly popular series of Lippincott's Farm Manuals, is a book that should be in the hands of every gardener, orchardist, nurseryman, farmer and housekeeper. The author, F. L. Washburn, M. A., is an authority on economic entomology, and as this work is the result of twenty-one years of experience, one is assured that it is not only full and complete, but up to the moment in the information that it gives. In addition to covering the insect pests of orchards, field crops, gardens, greenhouses and the like, those attacking man, animals and poultry are dealt with in a thorough manner. The use of insecticides spraying and fumigation, are explained, and the work goes into the destruction of four-footed pests, such as rabbits, gophers, moles, field mice and other destructive rodents. The section devoted to useful birds is well illustrated and extremely informative, forming a most valuable addition to the book. The volume contains four colored plates and over four hundred exceptionally well chosen illustrations that are an indispensable addition to the text. Published by J. B. Lippincott Company, Washington Square, Philadelphia. Price two dollars net.

"Successful Canning and Preserving"

This volume, by Ola Powell of the United States Department of Agriculture, is one of the most valuable of the Lippincott's Home Manuals that are so deservedly popular, by reason of the authoritative nature. This is, no doubt, the most complete exposition of the subject of canning, preserving, drying and brining of fruits, vegetables and meats that has yet been published. The twenty chapters cover every branch of the work, and with the handsome colored plates and one hundred and sixty-four other illustrations, the three hundred and seventy-one pages make up a volume that should be of the greatest value to the housewife, particularly at this time, when the conservation of food is such an important matter. Miss Powell, through her Government Canning Club work, has supplemented her rich knowledge by experience that has been most successful, and this book puts all this knowledge at the service of the reader. The different methods of canning and preserving are all described and explaind in the most clear and concise manner, from the construction of home-made canning apparatus to the use of the more elaborate equipment. While intended primarily for the housewife, Government field agents and teachers of home economics will also find the book practically indispensable in their work. Published by J. B. Lippincott Company, Washington Square, Philadelphia. Price two dollars net.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

Archie Henline of Klamath Falls, has put on another assistant.

Billy Rundle passed through San Francisco, on his way North.

N. E. Bond of Klamath Falls is overworked and looking for help.

M. G. Plumlee of Hirsch & Kaye is now in camp with the U. S. army.

Smiling Mose Grady of Hartsook's, Fresno, spent his vacation in San Francisco.

H. R. Brinsmead and wife of Reno, Nevada, were in San Francisco, recently.

George A. Dolan, of Wolff & Dolan, has just returned from his vacation. He says there is no place as pretty as Lake Tahoe.

H. James, our local artist to the trade, is turning out some exceptionally fine color work for the out-of-town studios, as well as those here in the city.

Charles M. Hadley, formerly with Hirsch & Kaye, is now chief clerk to the camp surgeon at Fremont. Charles as a sergeant, first class, looks fine in his uniform.

Our old friend Abe Harris, formerly of the California Photo Button Company, is now secretary to George Celder, Senator for the Sixteenth Senatorial District, in Oakland.

Improved Arc Lamp Carbon Holder

An important improvement is announced in the Kliegl arc lamp carbon holders for Kliegl universal hand feed arc lamps, as manufactured by the Universal Electric Stage Lighting Company of New York City.

Heretofore the bottom holders were not made for a wide range of carbon sizes, whereas as now made for seventy ampere lamps, the holder is adjustable and will take with equal ease three-quarters or five-sixteenths-inch carbons, or any intermediate sizes. A smaller holder is made for twenty-five ampere lamps, and is adjustable in the same way. In both styles the carbons can be adjusted sideways, as well as vertically, thus maintaining perfect alignment and constantly focusing in the center of the lens. A special arrangement has also been made for fastening lugs with asbestos wire, and carbon drop is always provided on these holders.

Quickening Film Cement

Many times film cement is found to set slowly and soften the film without cementing firmly unless ends of film are held in clamp for a considerable time. In such cases the addition of from a fifth to a half, by volume, of glacial acetic acid will do the trick in speeding up many of the commercially prepared cements. However, too much acid may cause the film to cockle in time if exposed to dry atmospheric conditions. And of course, with any quick acting cement, the film surfaces must be put together instantly after the cement is applied.

Credit For Pioneer Work

Credit for solving the secret of producing grades of optical glass, which were formerly imported, and the importation of which was stopped by the war, is accorded to the Bausch & Lomb Optical Company of Rochester, New York, in an article authorized by the War Industries Board and appearing in a recent issue of the *Official Bulletin,* as follows:

"Optical glass, although not required in large quantities, is nevertheless an item in war operations which is important because by optical instruments much of the firing, especially of artillery, is directed. If the men are not equipped with adequate fire-control instruments or cannot see to aim properly, their firing can serve little purpose. A field army or a battleship without field glasses, telescopes and other optical instruments is manifestly placed at a serious disadvantage.

"Before the war, little effort was made to produce optical glass in the United States. Manufacturers of optical instruments were able to obtain optical glass in desired quantity and quality from Europe, and consequently did not feel the necessity for mak-

ing it themselves. In 1912, however, the Bausch & Lomb Optical Company of Rochester built an experimental optical glass plant and placed a practical glassmaker in charge; by 1914 this company was able to produce a few types of optical glass.

"The geographical laboratory of the Carnegie Institute of Washington was called upon to aid in the production of high grade optical glass. A party from the laboratory was stationed at the plant of the Bausch & Lomb Optical Company in April, 1917, and for seven months all efforts of the laboratory were concentrated at this plant. At the end of 1917, the essential details of the manufacture had been developed and glass in considerable quantities was being produced. The efforts of the laboratory were then extended to the Spencer Lens Company and to the Pittsburgh Plate Glass Company of Pittsburgh."

Photographs For Advertising

The Paco Studios, 116 South Fourth Street, Minneapolis, Minnesota, make a specialty of photographic post cards mailing cards, business cards, letter tabs and illustrations for advertising and sales literature. Their work is of the highest class, and their prices are most inviting. Photographic post cards have an appeal that the ordinary cards fail to make, and the same can be said in favor of any form of photographic illustrations, be they used as a business card, as a tab, forming part of a letter, or as an aid to the forcefulness of an announcement, a catalogue, or whatever it may be. The firm is desirous of securing a few live representatives to whom exclusive territory will be given. Orders should not be hard to secure, and as the demand is bound to increase as the merits of the goods become known, one having some little sales ability should do quite well handling this line. Write the firm as above and learn what they have to offer.

"Catalog No. 102"

In this new catalogue, the David Stern Company, 712 Davisco Building, 1027 Madison Street, Chicago, have even improved upon their former fine list of photographic supplies. Several new lines have been added and the advantages of the firm's schedule shipping department and special service departments are explained. There is also an interesting explanation of the new guarantee which should assure the satisfaction of every person having dealings with this firm. This new catalogue is well printed and replete with desirable goods at prices that are particularly inviting. Send for a copy they are free, before you forget the matter.

Advance Photo Printer

This is a machine having wonderful capacity in the printing of uncut rolls, single films or plates, with the utmost speed and precision, as well as with the minimum amount of trouble. The masks are instantly adjustable, and so accurate in results that the prints can be trimmed in lots of fifty or a hundred, thus eliminating hand trimming. An automatic numbering device stamps the order number on the back of each print and the foot lever that operates the machine further increases the speed obtainable. Instant adjustment of the light prevents the delay ordinarily caused by dense negatives, besides causing an improvement in the work, while a sixteen-mirror reflector augments the light and saves time, as well as current. The mechanical designing, the construction, and the finish are in keeping with the merits of the machine, making it just the thing for the progressive finishing establishment, or the studio doing a large business. The cost is modest and when the saving of time and labor is considered, assures a profitable investment. Write the manufacturers for particulars, addressing the Advance Photo Company, 4321 Eleventh Avenue South, Minneapolis, Minnesota.

Flag Raising at Optical Plant

"The most inspiring sight I have ever seen," was the statement of City Assessor Charles E. Ogden, speaker of the occasion, as amid a burst of spontaneous cheering from five thousand throats, Old Glory was slowly hoisted to the top of a new sixty-foot steel flagpole at the Bausch & Lomb Optical Company's plant shortly after noon yesterday.

The exercises were attended by over five thousand employees, company officials, army and navy officers and others connected with the company. The program began with a concert by the Bausch & Lomb Band, under the direction of Theodore Dossenbach. Two army lieutenants stationed at the plant hoisted the flag. William A. E. Drescher led the salute to the flag and the pledge of allegiance. The gathering was then led in recit-

ing "The American's Creed" by Edward Bausch. An interesting feature of the program was the reading by Mr. Ogden of a letter from Brigadier General C. C. Williams, acting chief of ordnance, United States Army, expressing appreciation on behalf of the ordnance department for the work being done at the Bausch & Lomb plant.

"The greatness of our country is the greatness of all of its people", declared Mr. Ogden, delivering the address. "The flag stands for the greatest gift of God in the form of the best government which has been given to any people on this earth."

In conclusion he said: "All that our Constitution and flag stand for are now at stake. Every individual is in the struggle to defend the rights of humanity. Every man in America who is doing an honest day's toil for an industry vital to the Government can say just as truly and emphatically as though he were over in France with his gun against the breast of the enemy: 'I am an American'."

"Movette" Re-Established on Firm Foundation

An announcement that will prove of interest to camera dealers is that which ushers "Movette" back into the industry. In the hands of Movette, Incorporated, of which company Homer Strong is president, Frank L. Hough, vice-president and general manager, and Charles H. Strong, treasurer, motion picture photography for the amateur promises to achieve the popularity which was predicted for it when the "Movette" system was originally introduced.

The true facts in the history of "Movette" are to some extent already known to the trade. The success with which "Movette" met, led the late Movette Camera Corporation into the grievous error of attempting quantity production with a plant and equipment which would have been equal to the needs of a more prosaic venture, but which could by no means keep pace with the business which developed. As a result, the impossible was attempted; quantity production was tried with limited facilities, errors cropped up in the assembly of parts, and other troubles due to the plant and working forces being overtaxed by the demands for the new amateur "movie" outfits.

Now that the physical property of the old company has been acquired by the new organization, in which has been retained only some of the department heads, because of their peculiar fitness and experience, the most prominent of the unnatural limitations to amateur endeavor in the "movie" field seem to have been eliminated.

Mr. Hough, speaking for his company, recently said: "Our sales policy will be one of exclusive representation, because we know that protection from unfair competition will promote the most desirable relations between the manufacturer and those dealers with whom we shall co-operate in exploiting 'Movette' in the localities where the demand for this equipment is awaiting, and will be quickly responsive to legitimate sales effort. By resting the representation for 'Movette' with the dominant and progressive establishments, the public will be better served, the retail distributors better compensated, and the manufacturer better fitted to co-operate and contribute to the success which everything indicates to its distributors."

"Movette" instruments now coming through from the factory are noticeable for several improvements and refinements which did not appear in the earlier model; an improvement in the film gate, making it heavier and employing two pressure plates in place of one is an innovation; new view finder with sight attachment is another; the instrument is now finished with dull-black crystal and blued steel fittings, which give the appearance of quality and substantiality in harmony with the superiority of the mechanism. There are other features new and interesting which add to the desirability of "Movette", both from the standpoint of salability and ownership.

Illinois College of Photography

Mr. and Mrs. Hutchinson, who will soon leave to take charge of their new studio, were recently tendered a theatre party and reception at the Camera Club rooms.

William Yamada, who recently graduated, has opened and will conduct a new studio for Mrs. Scudder, former student, at Cedar Rapids, Iowa.

Captain Moody Dawson of Texas, class of 1904, is stationed at the office of the Chief Signal Corps Officer, Major Sullivan, Washington, D. C. Through all of his heavy responsibility, Captain Dawson still wears the same happy smile of earlier years.

XXV No. 9 SEPTEMBER, 1918 Price, 10 Cent

SAN FRANCISCO
PUBLIC LIBRARY

CAMERA CRAFT

SAN FRANCISCO
CALIFORNIA

The camera in the air

will play a most important part in the winning of the war. The exacting demands of the aerial photographer require extreme care in the selection of a printing medium.

GRADATION must be such that finest variations in tonal quality shall be perfectly recorded and every object depicted perfect in every detail.

LATITUDE must be broad enough to compensate for the varying densities of negatives made under different light conditions.

SPEED must be sufficient to permit prints to be made in record time with whatever light source is at hand.

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produces prints which fulfill these requirements by registering all that the observer can demand.

For commercial and studio photography a paper that is found satisfactory for aerial work cannot be far from the ideal.

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is a *chloride*, not a bromide, paper, possessing great speed, and unlike a bromide paper, gives, in projected enlargements, contact print quality. That is why it is such an overwhelming success.

ANSCO COMPANY

Binghamton, N. Y.

WHAT IS THY SECRET
By SAMUEL ADELSTEIN

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY
FAYETTE J. CLUTE, Editor
CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

VOL. XXV SEPTEMBER, 1918 No. 9

Photography In War

By Harry A. Brodine

Illustrations from Various Sources

Now that the nation is face to face with the serious business of war, and must find the most expedient means in every department of offense and defense for its successful prosecution, the important part that photography is playing is not fully realized by the layman whose ideas on the subject are gathered mainly from the censored photographs that are used by the press in such great numbers. There are many applications of photography that are rarely exploited in public print, but the end of the war will no doubt show that remarkable work has been done in aerial, Roentgen ray, motion picture, and even other branches of photography. Even now, some of the powers may be sending photographs by telegraph and the wireless with almost the same facility as ordinary messages.

The signal officer of the army has sent out a call for photographers for active field work with the various divisions and field armies. Those enlisted for photographic work are rated as high as Sergeants First Class. Their services are required in the photographing of military operations and those who qualify in this vitally important work may expect to see plenty of action.

No doubt the most interesting phase of war photography is that undertaken by the aerial forces. In the present war, perhaps for the first time, we find aerial photography employed with really great success. A few years ago this branch was considered the most difficult one in photography, despite the fact that a beginning was made more than fifty years ago, when, shortly after the invention of the light-sensitive wet plate, Daguerre made the first pictures taken from a balloon.

The first really practical results in aerial photography were achieved in 1859 by Napoleon Third, who, during the battle of Solferino, had the Austrian position photographed. But while the number of such pictures naturally increased from year to year, the required long exposure, due to the limited sensitiveness of the wet plates, resulted only in views somewhat lacking in sharpness. It was not until 1880, some time after the advent of the dry plate, that instantaneous views were taken from a balloon and perfectly sharp pictures obtained. Pictures now made in the thousandth part of a second have the perfect definition required for war purposes. They are taken at heights of eight thousand feet and over, and give a correct and infallible record of the scene, be it the work going on behind the enemy's lines, or whatever it may be. When an army of perhaps one hundred thousand men is being moved forward, trainloads of food, clothing and ammunition must also be brought up. These and other activities make it necessary for the aerial photographer to secure photographs of the railroad siding, the enemy trenches and the like, and these pictures enable the general staff to know definitely how many yards of trenches have been added since the day before, how many new divisions have been brought up on a given front, and so on.

Photographic reconnaissance patrols are sent out sometimes as often as four times a day; and, within an hour after their return, a complete set of pictures, each with needle-sharp detail, is given into the hands of experts assigned to the particular work, who, in conjunction with the general staff, dissect them and therefrom plan forthcoming military operations.

In addition to aeroplane and balloon photography, means have been devised whereby photographs may be made with the aid of pigeons, kites and rockets. The Germans have used a rocket-camera, invented by a German engineer after fifteen years of persistent experimenting. The modus operandi is both simple and ingenious. The camera is carried aloft by the impulse of a rocket that soars skyward as does an ordinary one. The head of the projectile consists of a thin metal shell containing a camera, while the section below holds a tightly packed parachute that is released by means of a time fuse. This last can be set to go off at any desired altitude within the climbing limits of the rocket, when, at the proper time the parachute is released and spreads sufficiently to hold the suspended camera aloft for a considerable period. In order that the lens may point steadily in the desired direction, a small gyroscope is provided. It is said that the maximum turning movement is so fully controlled by the gyroscope that the swing does not exceed an arc of one degree.

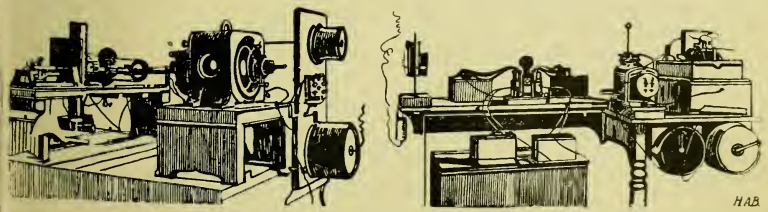
On the march the whole outfit, weighing about eight hundred and eighty pounds, is borne by a special carriage. Part of the equipment is a launching frame that guides the rocket at the time of its flight from the ground. Arriving at the point of operations, the direction and the angle at which the rocket is to be started on its journey is determined by means of a range finder. The gyroscope is set spinning by a weighted cord that is unwound from its shaft; and, with this little wheel spinning, the rocket is ready for its trip aloft. Plates seven inches square can be handled by the camera, and pictures can be taken from a height of nearly one thousand seven hundred feet, with a field of

APPARATUS FOR SENDING PHOTOGRAPHS BY WIRELESS, THE INVENTION OF A FRENCH SCIENTIST

arc of vision of fifty degrees. On account of the comparative smallness of the apparatus, it is difficult for the enemy gunners to obtain a hit.

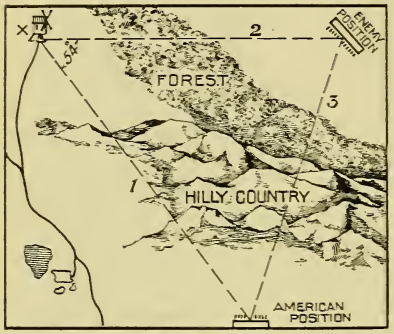
The rocket is ignited electrically by means of a light cable from a distance of three hundred feet. The initial discharge cuts loose the heavy weight that sets the gyro spinning. The second electrical impulse ignites the rocket's charge and starts the missile skyward. In about eight seconds an altitude of one thousand six hundred feet is reached, and shortly before the maximum elevation is attained an electro-pneumatic contact at the top of the hood-shell operates the shutter and simultaneously frees the parachute. Immediately under the parachute, as it floats in the air, is suspended the hood-shell containing the camera, while at the end of the line are hung the body of the rocket and a vaned guide rod. As the whole equipment settles earthward, the guide rod strikes the ground first, and by thus lightening the load on the parachute, the camera descends slowly, so that it can be either caught or brought to rest without a jar.

Aerial exposures made, the plates are developed, and prints, often still wet and quite closely resembling maps, are delivered to the artillery officer in com-



THE THORNE BAKER SENDING AND RECEIVING APPARATUS

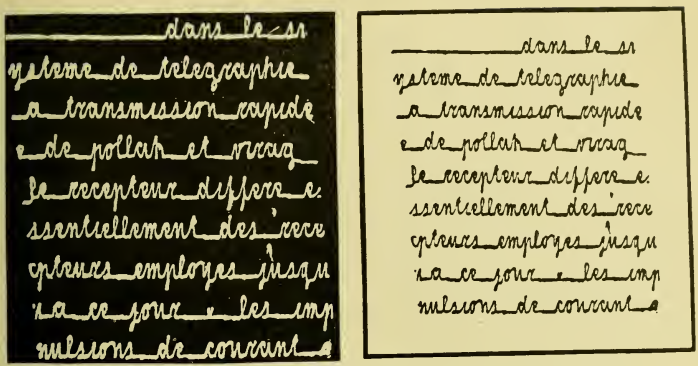
mand, and then comes the task of determining the exact position of the enemy's batteries. Trenches are shown by light lines, and gun positions by light points over one another. An exact computation is made of the distance between our own and the enemy's batteries, being a simple matter of triangulation. In the illustration herewith, one side of the triangle is indicated by dotted line 1, extending from the American position to the auxiliary object, a windmill at X. The actual length of this line is determined, from elevated points or trees, by means of a transit, and accurately computed and noted on the photograph. The side of the triangle indicated by dotted line 2, extending from the auxiliary object, the windmill, to the enemy's battery. The actual length of this line is easily obtained by multiplying the photographic distance between its two end points by the proportion of the photographic reduction of the view. On drawing this line a definite angle is obtained at X; and, since the length of two sides and the arc of the enclosed angle of the auxiliary triangle is known, the length of the third line, the exact distance between the two batteries, is easily computed. The heavy artillery places the greatest value on these data, because their chief field of action consists in the use of high trajection guns and mortars in destroying enemy batteries and an exact knowledge of the distance is of the utmost importance in achieving their end. According to *Das Bild*, it was in this way that the Germans succeeded in destroying Forts Lierre, Walshem and Ayvelles.



SHOWING HOW RANGE IS CALCULATED FROM PHOTOGRAPHS MADE BY THE AERIAL FORCES

Photographs may now be transmitted by telegraphy, and there has been some talk in scientific circles of the coming of wireless photography. Thorne Baker and Professor Korn have been working on both problems for several years, and both have exhibited their results. In 1900 Thorne Baker arrived in New York, from London, to demonstrate his Electrolytic Telectrograph for a prominent newspaper. Experiments were made over a wire between New York and Boston, a distance of about two hundred and thirty-five miles. Professor Korn was the first to successfully operate a commercial system, but it was slow and easily gotten out of order. This was previous to 1907, but since that time there has been made material improvement in the methods employed.

The Pollak-Virag method of photo-telegraphy has been used by l'Eclaireur de Nice for the transmission of dispatches from Paris. The process, in brief, consists of attaching a mirror to the membrane of a telephone and then projecting a strong beam of light thereon in such a way that the controlled vibrations of the current passing through the wire cause the mirror to vibrate in unison therewith and write or form the actual words on a sensitive surface that is then developed. By this process it is possible to transmit some forty thousand words an hour, the whole operation being quite automatic.



MESSAGES AS SENT AND RECEIVED BY THE POLLAK-VIRAG METHOD

The theory of Professor Korn's apparatus is based on the properties of selenium, a metal whose sensitiveness to light causes the electrical current to pass in varying degrees of intensity, according to the strength of the light allowed to impinge upon it as the photograph is being transmitted. In brief, a pinhole beam of light is made to travel over a photograph in much the same manner as a phonograph needle moves across the record, and the reflection of this beam of light is made to fall on a series of tiny metal plates separated by very thin layers of selenium, forming a cell. The intensity of this reflected light will vary according to whether it travels over a light or a dark area on the photograph. The selenium is affected by this varying light, and allows a cer-

SHOWING NEGATIVE IMAGE ON TIN FOIL READY FOR TRANSMITTING AND POSITIVE IMAGE AS RECEIVED BY THE THORNE BAKER PROCESS

tain amount of electric current to pass through it for each variation of light. This constantly changing current may be sent through many miles of wire, and by means of ingenious instruments may be made to reproduce the photograph with great success.

Already certain European newspapers have installed this device and are able to reproduce pictures and photographs, taken hundreds of miles away, a few moments after they are taken. The value of this apparatus in time of war cannot be over-estimated.

But greater things have been predicted for a combination of this machine and the motion picture. Some day we may be able to sit in auditoriums and watch events taking place at the identical moment in places miles away. Californians will be able to witness a Presidential inauguration in Washington, a boat race on the Hudson or a battle between warring nations, at the very moment these things are taking place. It is far from impossible; it is probable. And all because nature provided us thousands of years ago with that evil-smelling brown powder, selenium.

A sheet of paper, coated with a certain chemical and lying by chance on a laboratory table, disclosed to a German physicist the marvels of the X-ray. In 1895 Professor W. K. Roentgen was experimenting with a glass globe from which most of the air had been pumped. He was repeating and enlarging upon the experiment of Sir William Crookes by passing an electrical spark through metal rods imbedded in the globe.

While engaged in this, to him, interesting pursuit, a sheet of paper coated with barium-platinocyanide happened to be lying on the table nearby. He noticed that when the current was passed through his apparatus, the coated sheet of paper emitted a peculiar, phosphorescent glow, very much like the light of a firefly. Further experimenting showed that when a coin was placed between the globe and the coated paper screen, a shadow was cast on the latter; but, when a piece of hard rubber, leather, or wood was interposed, no shadow or only a very light one could be seen.

Professor Roentgen was surprised, as wood, rubber and leather are ordinarily quite opaque to light rays, and therefore the natural conclusion was that the rays emanating from the glass globe must be quite different from other light rays.

The professor took his apparatus into a darkened room and found that although the rays given out by his glass tube were quite invisible to the eye, they were able to affect a photographic plate as readily as light rays. He furthermore discovered that even though the photographic plate was fully protected from light by wrapping it in black paper, or even putting it in a wooden box, the invisible rays from the glass globe were able to penetrate such covering and affect the sensitive emulsion in the same manner as does ordinary light rays. Roentgen, never having heard of rays of this description, and not knowing what to call them, had recourse to the algebraic X, denoting an unknown quantity. This temporary name stuck, and even today we refer to Roentgen's discovery as the X-ray.

The Roentgen ray has been invaluable to the doctor at the front in locating

shell splinters, shrapnel and bullet wounds. Apparatus has, since the beginning of the war, been so perfected as to show the exact depth of the imbedded bullet or other substance, and its exact location in relation to the various organs, so that probing may be done with every assurance that the first attempt will bring forth the foreign body. At the beginning of the war, the English inspected the bales of cotton at the docks for contraband matter by means of the X-ray; and when the war is over we may hear of other and newer uses to which this form of photography has been put.

The war has brought out several new designs in cameras suitable for aerial work. In the wreckage of a Zeppelin brought down in France, was found a peculiarly constructed camera resembling, and operated on very much the same principle, as a revolver. A camera along similar lines has been developed in this country, and "shooting the picture" becomes a truism in describing the employment of this new camera. The observer, stationed in his place in front of or behind the aeroplane pilot, as the case may be; and, with his gun-hand on the pistol grip, sights along the guide provided for the purpose at any desired angle on the terrain below, pulls the trigger, and "bing", the exposure is made. In one of these types, a roll of film is used, a new and unexposed portion of which is shot into place immediately after each exposure by pulling a small lever. This enables the observer to make one exposure after another, while the aeroplane is moving rapidly over a trench or other field work; and then, by pasting together the severed prints so obtained, a valuable serial photograph is secured.

FOLMER & SCHWING REVOLVER STYLE AEROPLANE CAMERA

The camera, while of the fixed-focus type, is equipped with a lens of fourteen inches focus that gives results ordinarily obtained with one of twenty - four inches focus. With a working aperture of f-6.8, exposures of one-thousandth of a second can be made.

After a roll of film has been exposed, the problem of getting it back to headquarters without landing, presents itself, and a very ingenious scheme, one employing a parachute has been developed. Cylindrical containers are provided with an umbrella-like parachute folded inside. By pulling a wire with a hook

on the end, the parachute can be pulled out; when, due to the tension of its wire framework, it automatically spreads out and drops gently to the ground. The film, inserted in another tin container made water-tight, by means of adhesive tape, is fastened to the loose wire hanging below. This is dropped where the observers, stationed below, can get the film and send it at once to headquarters for development.

THROUGH THE FOG — By JOHN B. GALE

Art and the Daily Life of Man

If you accept art, it must be a part of your daily lives, and the daily life of every man. It will be with us wherever we go, in the ancient city full of traditions of past time, in the newly cleared farm in America or the colonies, where no man has dwelt for generations to gather round him; in the quiet countryside as in the busy town, no place shall be without it. You will have it with you in your sorrow as in your joy, in your work-a-day hours as in your leisure. It will be no respecter of persons, but be shared by gentle and simple, learned and unlearned, and be as a language that all can understand. It will not hinder any work that is necessary to the life of man at the best, but it will destroy all degrading toil, all enervating luxury, all foppish frivolity. It will be the deadly foe of ignorance, dishonesty and tyranny, and will foster good-will, fair dealing and confidence between man and man. It will teach you to respect the highest intellect with a manly reverence, but not to despise any man who does not pretend to be what is not.—William Morris.

Go back to the simple life, be contented with simple food, simple pleasures, simple clothes. Work hard, pray hard, play hard. Work, eat, recreate, and sleep. Do it all courageously.

We have a victory to win.—Herbert Hoover.

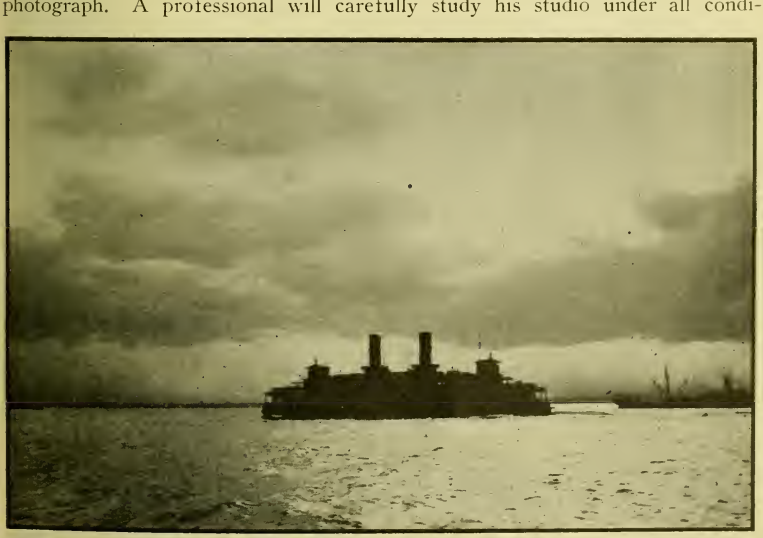
Photography Against The Light

By S. A. Schwarz, A. M. C. E.

With Illustrations by the Author

A friend, a well known professional photographer, one who is fully conscious of the fact that there is no royal road to success in the gentle art of the latent image, knows and followed one beaten path and obeys one golden rule in making all his pictures. This rule, although formulated years and years ago, and now gray and bent with age, is still followed by the vast army of professionals. This golden rule, when closely followed, will do much to produce good picture, either portrait or landscape, but hardly such as can lay claim to being truly artistic productions.

This same professional, during the course of a conversation carried on while looking over some of my pictures, made the frank admission: "It takes some of you amateurs to show us professionals how to make pictures. It is one thing to get satisfactory results in a studio, working under a skilfully arranged skylight and aided by the numerous accessories employed; but can they be called pictures, have they any pictorial value? No, they lack those salient qualities that go to make a real picture, something more than a good photograph. A professional will carefully study his studio under all condi-



EVENING

tions of light, the most advantageous, as well as the most adverse; and, after determining which section or portion of the gallery gives the most satisfactory results, bunch his backgrounds and other paraphernalia into that corner, and then announce that he is ready to do business, that he is prepared and equipped to turn out good photographs."

In my humble estimation, based upon my limited experience, the above statements seem rather sweeping; in fact, besides being entirely too severe, appealed to me as somewhat unjustified. There flashed across my mind such names as Goldensky, Pirie McDonnald, Paul Lewis Anderson and many others, all of them exponents of the highest type in the art of photography. These men have devoted the greater part of their lives to the bringing of pictorial photography to the high plane of perfection it has reached in the last few years.

My protest against my friend's assertions fell upon deaf ears, to say the least. He would not relinquish his position. Picking up one of my views, "The Gathering Storm", and looking at it with a critical eye, he said: "One of the first principles in photography is, not to aim the lens directly at the source of light; let the illuminating rays come from behind, over your shoulder, at an angle of forty-five degrees." This, totally contrary to the execution of the picture he held in his hand, if it had been applied to the same subject would have resulted in an ordinary snapshot of the most uninteresting nature.

Along comes Mr. Amateur, who either knows nothing about these laws, or makes no attempt at remembering them if he does, points his lens directly at the sun, whose brilliant rays are strongly reflected in some lake or other body of water, judges his composition and finds everything to his satisfaction, and then makes a very short exposure. Thus he rambles throughout the day, over hills and through dales, blissfully ignoring almost all conventionalities of light and shade; with, in most cases, the result that every, or nearly every, exposure gives a picture worthy of our admiration.

Although I did not at first agree with my friend, owing to his too radical assertions as well, and my own deep-rooted respect for the profession, his arguments were so convincing and he was so sincere in making them that I soon found myself swayed to an accordance with his ideas. I have, since the occasion of this discussion, devoted much time and thought to this contra-light class of work; a class that opens a tremendous field to the pictorial worker, a field which has not received a great deal of attention, and therefore has been but slightly developed.

As far as the camera is concerned, any kind of instrument, the cheapest, as well as the most expensive, is well adapted to this class of work. The owner of a Brownie has as good a chance of obtaining a prize-winner as the amateur who possesses an instrument fitted with a high-priced anastigmat lens, costing several hundred dollars. I may safely say that in this kind of work it is the man behind the gun, and not the gun itself.

Our choice in the matter of films and plates is practically unlimited. I have seen some of the finest specimens of this contra-light photography, taken on both film pack and roll film, of all the popular makes found on the market. The film, by virtue of its thin body and the black paper which backs it, minimizes,

SHADES OF NIGHT

in a measure, the possibility of halation; an advantage only obtainable with plates of a special type, those that are backed, or those known as double-coated.

Needless to say, one of the essential features of a good picture is its composition. After having given this factor attention, one should await a suitable cloud formation; and, when the sun is partly obscured by the clouds, let the

THE GATHERING STORM

shutter click. A ray filter of medium density, or one of the royal foreground type will be found of great value to the pictorialist. In order to avoid double reflection, and I shall not dwell upon that part of physics which deals with the angle of incident and the angle of reflection, it is advisable to have the camera as close to the surface of the water as may be found convenient.

SUNSET ON THE HUDSON

Exposures of this type on either plates or films are best developed by the tray method, so that the progress of development may be somewhat better controlled, yet at times very good results are obtained by the use of the tank. Owing to the intensity of light which the plate or film receives, a comparatively short exposure is needed, rarely more than one-one-hundredth of a second, and sometimes less than that; a factor which causes the finished negative to be rather thin. A judicious selection of the right printing medium, say one of the slightly contrasty professional papers, will enable the amateur to obtain excellent results; prints that, besides having the necessary snap are very soft and rich in tone values, I have found that, generally speaking, those developing papers having a slight sheen, the kinds that are usually known as Velour, Semi-Matte or Studio, are the ones which best adapt themselves to this kind of work.

Now the feeling of beauty more than any other of the more intellectual qualities is communicated psychically and by what is called suggestion. We gradually come to see and hear what we never saw and heard before by living with people who have eyes and ears; and it is true of arts, as well as of manners.—RALPH RADCLIFFE-WHITEHEAD.

Developing In Hot Weather

By Luther Wagoner

Here in Cuba there are many interesting subjects for the camera, but the hot weather of the summer days makes successful development somewhat of a problem. Last summer I lost over a dozen rolls by entrusting them to professionals. In some cases the gelatine emulsion melted and ran; in others, reticulation made the negatives unusable. We have found it advisable to have our own photographic department right here in our office, so that we can do the work ourselves, rather than send it out and invite the risk of losing it. With an air temperature of at least ninety degrees Fahrenheit, and with wash water at seventy-five, we are turning out negatives of good tone and quality, and consider our hot weather troubles as ended.

The procedure followed is that recommended by Professor Namais, in his "Manuale Teorico Pratico di Chimica Fotografica". Under the title "Hardening of Gelatine in Photographic Plates", he says that in order to avoid the softening of the emulsion or its dissolution during the act of development, there should be included in the developing bath, after being prepared, ten per cent of sulphate of soda or potassium. After the plate is developed and washed, it should be submerged in a bath of formaline of five per cent strength, leaving it in this bath a few minutes and then washing it before placing it in the fixing bath.

It is convenient to wash the negatives well before fixation, because any

HOMEWARD BOUND AT EVENING — By S. A. SCHWARZ, A. M. C. E.

traces of the developer left in the film, on combining with the silver given off by the fixing bath, not only darkens this bath very rapidly but it may produce stains and fog in the negatives. In order to avoid this, it is best to prepare a fixing bath as follows:

Water	1000 cubic centimeters
Hypo	400 grams
Boric acid	50 grams

or what is the same:

Water	10 parts
Hypo	4 parts
Boric acid	½ part

Although the bath of hyposulphite may be used several times, it is better not to abuse it, in order to avoid bad results. It is very easy to tell when the bath should be renewed by placing a drop on paper and noting whether it becomes dark, on being exposed for some time, to the light and dampness.

The developer that we use is a two-solution one, made up as follows:

A:	Water	10 ounces
	Carbonate of soda	108 grains
B:	Water	10 ounces
	Sulphite of soda	1 ounce
	Hydroquinone	58 grains
	Metol	10 grains
	Bromide of potassium	14 grains

Use equal parts of A and B. If more rapid action with and greater contrast is desired, take two volumes of A and one of B. For slower action with less contrast, take one volume of A and two of B.

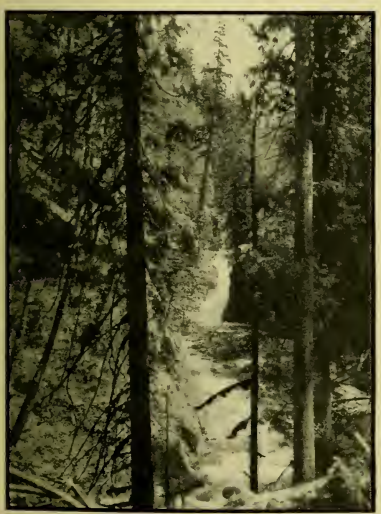
While I have not tried any other developer, I cannot see why any good clean working one should not give equal satisfaction as a part of this system. We still have a supply of metol available, and I have not as yet tried any other than the above.

Pictures from the Trail

By Richard J. Grace

With Illustration by the Author

The most appreciated pictures in my album are those that have been taken from the trail. City and home pictures are easily obtained, and, being of everyday environments cannot compare in interest and story with those secured by personal physical effort in the ever-changing panorama of the canyon or mountain trail. The most fascinating highway known to man is the trail. Often it is a possessor of an aboriginal history, as interesting in its rustic setting as the Appian Way, with its classical memories. Again it speaks of the Golcondian dream of adventurers in search of the mother lode, and another one of the severely practical, instrument-determined trail of the forest service, uniform fifteen per cent grade, and wide enough for a pack train. Whatever its origin or purpose, it is ever changing, ever fascinating. You meet the ranger below Metlako, in the spring, and Albert smiles, for it is the first time he has seen you that season, and he inquires if you have a rope. We have not, so he lends us one, for there has been a slide over the ledge at the log jam, and it is still soft and moving, and we will have to line ourselves over. The trail is the despair of the photographer until he learns its moods and pleasures. The indoor



RAINBOW FALLS—Cut away brush to get this picture

SUMMIT COAST RANGE—Where road makes hairpin turn

photographer and the snapshotter know their light conditions to perfection, or do not attempt a photograph unless the illumination suits them. If on the trail you were only to take pictures when the light suited you, your album would still be in the infant class. You will have to use a tripod, for while your waterfalls will take from one-fiftieth to one-twenty-fifth second, if you wish any shadow detail, there will be many a place in the shadowy aisles of the Douglas first, where one second at f-6.3 will not be an over-exposure. Use a double-coated plate if there is any sky, otherwise you will have an active aurora around each little patch of sky in the top of the firs. And if the day is still, use a ray filter and be rewarded by a sky and distance detail that is very satisfying. I cause a smile on the part of some of my trail mates by my constant devotion to my exposure meter, but I can say the following with an easy conscience: Using a double-coated plate with its great latitude, and the exposure meter to give the time, I have not under-exposed, or over-exposed a plate since I purchased the meter. Towards sunset, when the shadows are long and the rocks and trail are red, while the light seems strong to the eyes, it is actinically very weak, and when you first consult the meter under these conditions, its verdict is almost unbelievable. In our country, Oregon, where in midsummer we have considerable forest fire smoke that adds more red to the color of the light, the meter has indicated twenty times the normal exposure at sunset, and the results as shown in the print have proved its correctness. Remember some of your sunset views with their black, detailless shadows, and think it over.

To come back to our trail, make a habit of turning around at the edge of each clearing, at each turn, and at intervals on any straightaway, especially if the trail is faint. Not only does this fix your sense of direction for your return, but you will discover vistas and views that you otherwise would have missed. Do not be afraid to get off the trail. From the trail you very often get the suggestion or hint of a picture that could be greatly improved by a short scramble above or below. I once had a ranger ask us how we obtained a certain vista he admired in a print. He was sufficiently acquainted with the country to know the location, but where we had obtained such a favorable view puzzled him. We finally explained the situation to him, both of us knowing a large patch of poison oak, about a quarter mile "this side" of the falls, and starting with this and a rockslide, we outlined the method of getting to our viewpoint. As this is on a scenic trail in a "park", the next time we were in there, we found that Albert had brushed out a trail to this point, and with characteristic thoroughness, had a little stencilled sign calling attention to it for the benefit of the tenderfeet.

Try some trail pictures this summer. You will earn them, not only by "the sweat of your brow", but by your whole epidermis. Like anything worth having, they require some effort; but they repay a thousandfold, and each print brings pleasant recollections and its accompanying story. I never look at my Larch Mountain pictures without an internal smile. I was putting my camera into its case preparatory to going down the mountain, when a man approached and asked if he might use my fire. I of course assented, with the proviso that he put it out when through, for his outfit showed that his feet were still soft.

TRAIL AT CASTLE GORGE
OREGON NATIONAL FOREST

PUNCHBOWL—EAGLE CREEK
HOOD RIVER COUNTY, OREGON

He disclosed a mammoth frying pan, and a glass jelly jar full of sliced bacon, and then lowered himself still further in my estimation, by bawling at his wife, "Mary, did you bring any lard to fry this bacon in".

The progress of the world is not like the motion of a solid body, of which as it moves the particles observe the same relation to each other. It is rather like the motion of a fugue; at times the tenor speaks more clearly, at times the bass, while the tenor sounds some less conspicuous note, or pauses in eloquent silence. So in the progress of the world the three motives of man's action: the sense of right, the love of beauty, the desire for material prosperity have not always equal place, but sometimes sound in temporary discord.—RALPH RADCLIFFE-WHITEHEAD.

Interiors with the Nitrogen Light

By C. C. Borden

With Illustrations by the Author

Although I do not consider my experience with the nitrogen light sufficient to afford data for an exhaustive and highly instructive article on its use, I will do the best I can to describe my own equipment and impart what I have learned in the short period during which it has been in use.

The equipment consists of a cup-shaped reflector, about eighteen inches deep and fourteen inches in diameter at the open end to prevent too wide a spread of the light, tapering down to eight inches at the socket; a five-hundred or one-thousand watt nitrogen Mazda bulb, and fifty feet of heavy electric cord with a screw plug at one end and a keyless socket at the other. A single pole switch should be placed in this cord near the socket end as being the most convenient place; that is, near the keyless socket that takes the plug on a three-foot piece of cord attached to the lamp and reflector. The five-hundred watt bulb can be safely used on any ordinary house wiring system, as six hundred and sixty watts are generally allowed to a circuit. The thousand-watt lamp calls for somewhat more current than ordinary house lighting, say a potential of from one hundred to one hundred and twenty-five volts. This will mean inserting ten ampere fuses, and while no doubt perfectly safe for a few seconds, for the long exposure of an interior it might burn out the insulation. Even the five hundred watts passing suddenly through a key socket is liable to cause short circuiting, hence the single pole switch recommended.

NITROGEN LAMP IN REFLECTOR

To use, attach the plug end of the fifty-foot cord to a base socket, such as are installed for vacuum cleaners, or to a regular light bracket that is out of the intended view, turning on the current at once. Then, attach the short three-foot piece of cord previously attached to the lamp and reflector, to the fifty-foot cord and turn on the single-pole switch.

Use this light to secure the focus by laying it on a chair where it will illuminate some object at the desired distance or distances. Stop down to about f-22, insert plate, remove cap, and then take up the reflector and proceed to play the light over the desired view, giving the darkest portions the most illumination. Wear dark clothing, and if you keep moving, you can walk all

INTERIOR MADE WITH NITROGEN LAMP AS DESCRIBED

about the room in front of, as well as behind the camera. Avoid throwing the light on mirrors, polished walls and furniture, glass book-cases, oil paintings, etc., for too long, and do not hold the light in one position long enough for a shadow to register on your plate. Reflected light from the ceiling will generally give sufficient illumination to the polished pieces, and an entire absence of case shadows is better than having them fall in different directions.

Do not be afraid to walk in front of the camera or into the picture, but always back out, using care not to twine the fifty-foot cord about the tripod, your own feet or any light weight chairs or small pieces that may be upset or displaced. Where hangings are light, about twenty minutes at f-22, using a Standard Orthonon plate, will be about right, although longer time will generally be required on account of darker finishings.

One can see that by using this light in this way, he is practically painting on the illumination where wanted, much as he would paint it on with a brush; in fact, the process is much the same as that of local intensification, except that one works on the subject itself, instead of the negative produced therefrom. This should make this method one particularly suited to those trying interiors in which the illumination is uneven by daylight and a flashlight is objectionable. The light can be directed more often to the darker portions of the subject, or allowed to fall thereon for a longer time; the better lighted portions being given little or scant attention. Polished surfaces should receive the light only when the lamp is held at such a point that the light is not reflected into the lens. This is achieved by remembering that light is reflected from such surfaces at exactly the same angle as it is received. For example, if the camera is a little to one

side of the center of the room, and there is a mirror facing the camera on the opposite wall, any light thrown on the mirror from a point the same distance to the opposite side of the room from the camera will result in light reflecting into the lens. All danger from polished surfaces at the sides are avoided by always throwing the light from the opposite side as one walks back and forth.

You will, of course, ask why one cannot throw the light from a position behind the camera, but a trial or two will convince you that the plan as outlined is far the best. Standing behind the camera the light has to travel so far that it has little strength, and the securing of fully timed negatives would become a matter of too much time being consumed. As long as one keeps his back to the camera, in order to avoid showing the lens his white shirt front or somewhat light face, he has only to keep moving to prevent any suggestion of his presence in the view in the resultant negative. And the negatives should be fully timed in order that there be no need of forcing, as too much carbonate in the developer will also force out any halation that may be present. Owing to the yellowness of the light, orthochromatic plates should always be used, and my own preference is for the Standard Orthonons.

Returning to the matter of the current consumed by the lamps, the fuses used in ordinary house-lighting circuits may have to be replaced temporarily when the one-hundred watt lamp is used. One can best find out from some local electrician, or the local electric light company, and then, if necessary, carry with him a few ten or fifteen-ampere fuses of the types in use in his city. One will also find the local underwriters have rules covering this matter, and these should not be ignored. The five-hundred-watt lamp can be used on the ordinary house circuit. The thousand-watt one consumes about ten amperes, a potential of one hundred volts or over. For that reason, if the larger lamp is used, it will be well for one to first get some definite information as to what will be the effect of plugging it in under the circuit conditions prevailing in his locality.

There is no good reason why the same light could not be used for portraiture, perhaps in connection with daylight, or in connection with a smaller light at the side in place of a reflector for the shadow side of the face. And for copying, the playing of the light upon the copy from both sides and from above and below should result in practically an entire absence of grain due to the surface of the paper. These are applications that I have not as yet given a trial, but I intend to do so as the opportunity presents.

A new camera, the invention of M. Marey of Paris, permits the taking of a number of images of a moving object on one plate. With this camera it is possible to show, as in the photograph reproduced herewith, the progressive positions of an athlete. Thus affording one of the greatest helps in athletic instruction yet conceived. Heretofore, the instructor was handicapped in explaining to his pupils the faults in his work, but with the aid of this apparatus it is a simple matter to photograph the athlete in action and point out to him the corrections to be made. This device should be of great value in illustrating instruction books for the army and navy, by showing the correct movements in saluting, grenade throwing, rifle positions, and the like.

Some Random Thoughts

By the Hobo Photographer

With Illustrations by the Author

The interest that a picture holds for a photographer, aside from its subject matter and the handling, may be based on one of several things. He is often interested in the means by which the picture was secured, the resulting print making this his main interest. To the question of how I secured the results in the two pictures herewith, I shall try to make answer in as clear and satisfactory a way as possible.

The picture of the valley presented itself one morning when I was out with my camera for something entirely different, in fact, I was after a couple of views of a little one-horse railroad town, views for the local newsstand that I was about to supply with post cards. While I got the pictures of the town, the lay of the land in the valley pleased me so well that I returned after luncheon, when the lighting was more to my liking, and made the exposure. In this matter of lighting on hills, look at the picture and you will see that there is an effect of late afternoon sun. Had I made the exposure with the light over the left shoulder, as the instruction books advise, I would have had little or

A VALLEY VISTA THAT INVITES

no detail in the pretty little rolling hills which so materially assist in making the print worthy of a place in my album. If one wishes to get distant hills to show up clearly and well marked, the time to make the exposure is either just before sunset or in the very early morning. Watch for the long shadows when you are after a view embracing distance, for two reasons: First, because the perspective is better at that time; and second, because the distance will not refuse to print, as it will were the exposure made in the heat of the day. I also used a very light yellow filter to help the detail in the distance remain strong enough to print with the clearness seen by the eye.

The foreground is often the making of a picture, and it is always of importance. By giving it something that will introduce a good contrast in lighting, it will help to throw the distance back and give perspective to the view. In this print the rock is too near the center of the picture space for artistic requirements, but if I had moved to the right or to the left, I would have lost the placing of the tree at the right, so I allowed the rock to remain in the center. To tell the truth, to my uncultured eye it "looks right perky" sitting there in the middle, where it emphasizes the drop into the valley beyond.

The view was one that needed all the snap I could get into it, so I developed it with amidol, by the tray method. Amidol gives negatives that are soft, and at the same time, full of snap. I have forgotten what paper I used for the print, but the plate was a Standard Polychrome. I think the print was made with the same developer used for the plates of the afternoon. Amidol, even after being used once, will keep for a day or two in cool weather. For prints, it needs the addition of a little bromide, when it works well with all papers that I have tried, with the exception of Velox, which last seems to require its own formula to produce the best results.

The other picture, that of the clouds and the hill, was taken on my way back to town. This is introduced to show how the light from behind the camera failed to give distance and perspective to the hills, hills that were much the same as those shown in the valley picture. What I wanted here were the clouds, as they were of the pretty, soft, spring-cloud type. They appealed more than did the hills; and, besides, we have to take our clouds when and where we find them. For this work, I used the same procedure, plates and all, except that I used a heavy yellow filter in front of the lens.

While both of these exposures were made on 5x7 plates, the negatives were used to print post cards for the newsstands. They sold very well, despite the fact that neither of them were titled. Many of us make some very good little pictures that would sell well on the card stands, but deface them by lettering on titles that are, through a mistaken idea, thought necessary. I never letter any scene that is not of a purely commercial nature, such as a birds-eye-view of a town, a prominent building, or something of that character. I find that so doing often gives me prints that are salable in other places. There is a good demand for pictures of pleasing scenery and odd or quaint landscape subjects. I have a number of such negatives that are ordered from by various stands.

There are four things to remember when one, as a semi-expert, goes out to make landscape work: To choose the proper lighting and the right time of day;

THE CLOUDS ABOVE THE HILLS

To try and get something into the foreground or near distance that will give perspective; To shade or hood the lens and use a ray filter, if needed, and to employ a soft, yet brilliant, working developer, such as amidol, metol-pyro, metol-pyro-hydroquinone, and avoid the forcing that results in the loss of sky and distance.

A great help in getting one's picture material brought together, is a convertible lens, one giving a choice of focal lengths. A hand over one eye in looking at the landscape will help one to see the effect as it will be recorded in the print. Many an otherwise charming view loses its perspective and "runs together", so to speak, when viewed with one eye only. With our two eyes we see perspective that will not be apparent in the print, with its flat surface, unless there are proper shadows or other means of producing the effect. We must learn to discriminate in this respect, just as we do in the case of landscapes that owe their charm to color, rather than to pleasing composition.

Moving Picture Exposures with Unit Photography

By F. Morris Steadman

Unlike exposures made with the ordinary camera, which may be made longer or shorter to accord with the stop used, the exposures made with the moving picture camera are practically always of uniform duration, about one-thirty-second of a second, or the speed at which the handle is turned. The problem of correct exposure in moving picture work, therefore, becomes one

of varying the size of the stop in accordance with the intensity of the light transmitted from the subject. To apply unit photography to the problem, we must first have the equivalent unit value for each of the f- values carried by the moving-picture lens. These are as follows:

f- values	64	45	32	22.5	16	11.3	8	5.6	4	3.5	2.8	2
Unit values	1	2	4	8	16	32	64	128	256	334	512	1024

In this table f-3.5 is an intermediate between f-4 and f-2.8 in what is otherwise a scale of doubling values.

The speed of any film or plate, as explained in "Unit Photography", is the exposure required with the unit stop, f-64, in photographing a subject that has one actino of photograhic brightness in its high-light area. This speed time, with the moving picture film, is one hundred and twenty-eight seconds. In unit photography, the exposure with the unit stop, in this case, one hundred and twenty-eight seconds; divided by any desired shorter exposure, in this case one-thirty-second of a second, gives the unit value of the stop that should be used. One hundred and twenty-eight divided by one-thirty-second equals four thousand and ninety-six, the unit value number of the stop required to make a moving picture camera exposure, did the subject have only one actino brightness.

It is obvious that the brighter the subject the smaller should be the stop used in photographing it; this because of the practically uniform exposure time that is given by the mechanism of the moving picture camera. The following table shows the stop that should be used for subjects of varying degrees of brightness as determined by the Aabameter:

Subject brightness in actinos.	2	4	8	16	32	64	128	256	512
Unit stop required	2048	1024	512	256	128	64	32	16	8
Equivalent f- number	1.4	2	2.6	4	5.6	8	11.3	16	22.5

The unit stop value, 4096, is seen to have no equivalent in f- numbers, as it would demand a stop having a diameter equal to the focal length of the lens, or f-1. It is also evident that the subject must have a brilliancy equal to four actinos before coming within the range of an f-2 moving picture lens with the regular turning speed of the crank, but photographs of subjects having such a low value in actinos are rarely demanded. An average landscape in bright sunlight measures one hundred and twenty-eight actinos, or about one-fourth that of the sky, which last has a maximum measurement of five hundred and twelve actinos. A white object in full, maximum sunlight, has double the latter figure, or one thousand and twenty-four actinos of brilliancy.

As the moving picture lens rarely has a stop smaller than f-16, the stop to be used for a subject having two hundred and fifty-six actinos or over, recourse must be had to the shutter blades in such cases. For a subject measuring five hundred and twelve actinos, the shutter blades should be closed to one-half their usual dimensions, and for a brightness of one thousand and twenty-four actinos, to one-fourth such usual width.

While on this matter of the brightness of various subjects it will be well to refer to the fact that the cameraman in exterior work is usually in the same light as that of his subject and can simply measure the brightness of his own hand as held in the prevailing light.

In practice, find with the Aabameter the number of actinos of brightness that the subject has, and then divide the number 4096 by that number of actinos in order to find the unit number of the stop that should be used in making the exposure. Unless these unit stop numbers have been substituted for the f-numbers on the lens, it will be necessary to have recourse to the table given in order to find the equivalent f- number and place the stop pointer thereat. A short-cut that obviates the making of any calculation, one that I employ in my own practice, is to mark each stop with the number of actinos of subject-brightness for which such stop should be employed. For example, stop f-2 is marked with the number four, the subject-brightness for that stop as shown in the table; stop f-2.8 being marked eight, and so on for all the others. With my lens stops so numbered, I have only to measure the brightness of the subject in actinos, find it to be, say, one hundred and twenty-eight actinos, place the stop pointer at 128, and turn the crank.

Should the following out of this method result in what the individual worker deems to be over or under-exposure in his case, he has only to change the respective actino numbers to the next smaller or the next larger stop, as the case may demand, throughout the scale.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

MAKE SOME TESTS: Why is it that the average photographer goes along using this or the other solution or method without trying to determine whether it is doing its work. He has a washing box that he thinks is working all right. A little red ink added to the contents would show him just how long it took for the water to change entirely, and a little permanganate test solution would show him when all the hypo was removed from the plates or prints. His belief that his print-fixing bath is working all right is most commendable, but dropping in a strip cut from an unexposed plate or film would show him just how it was doing. His plates do not develop just right, and he wonders whether it is the result of improper exposures, a leaky camera, a defective batch of plates, or the developer. It would take but a moment to expose a piece of developing paper behind a negative that he knew just how to time, and then develop that as a test, He thinks his dark-room light is safe, but a test would be the most simple matter with a waste plate, with one end covered up, allowed to remain in its light for a given time, and then developed. He believes his shutter works at the prescribed or indicated speeds, but snapping it at an arc light while the camera is swung from side to side will give him a row of dots that represent the alternations of the current, so many a second, the number determined by asking the power people. And so on through a long list.—R. T. Y., Utah.

PRINTS FROM BROKEN NEGATIVES: For a number of years it has been my practice to resort to various dodges suggested for the making of prints or duplicate negatives from broken originals; and, while becoming fairly expert,

I have yet failed to be satisfied with the results, and less so when considered in relation to the time and trouble expended. Of late, all this is changed. The moment prints are required from a broken negative, or a negative from which prints are required, becomes broken, the best possible enlargement is made from the damaged plate, and this is sent to a good artist to be worked up; after which it is copied, giving a new negative of the original size. In this way all fussing is done away with. The making of the enlargement is very simple, because I am enlarging from my other negatives all the time, and copying the worked-up enlargement to get the new negative is even a more simple matter.—W. E. R., Tennessee.

SEPIA TONING: The amateur who makes up his own solutions will find the following method of sulphide toning or re-developing will be of interest. After carefully washing the print, place it in a two or three per cent solution of sodium sulphide for from three to five minutes. Rinse and then bleach in the following solution:

Water	10 ounces
Potassium ferricyanide	75 grains
Potassium bromide	75 grains

After thorough bleaching, rinse print in two or three changes of water and replace in the first sulphide bath, leaving therein until the desired tone is obtained.—S. A. S., New York.

A HOME PORTRAIT DODGE: Every photographer making home portraits by ordinary window lighting loses a good many negatives by reason of movement during the rather long exposures sometimes required. I have overcome this difficulty by having fitted to the support that holds my side reflector, a clamp that will hold a small steel rod horizontal at any height and any reasonable extension. As the subject is posed and the side reflector brought up into position, this rod is so adjusted that it just touches the sitter's head, the end meeting the hair. This is not intended to act as a support, but its contact is sufficient to enable the sitter to avoid the unconscious swaying that will often result from too long a pose. Where the rod, which is dark in color, shows in the negative through coming in front of some light object, it is easily taken out with a very little retouching.—W. E. R., Texas.

TEST FOR HYPO IN PRINTS: To an eight-ounce bottle of distilled water add four grains of potassium permanganate and eight grains of caustic soda, shaking to dissolve. Put a few ounces of water in a graduate, and allow the drip from two or three of the washed prints to fall therein. Then, the addition of a few drops from the test solution will give a violet color that will gradually change to a slightly greenish tint if any hypo was present in the drippings from the prints.—F. G. H., New Jersey.

USING METOL SUBSTITUTES: Nearly all of the new metol substitutes require the addition of a strong or caustic alkali; and, when such is the case, the photographer must remember that the need of an acid or stop bath becomes quite imperative. Acetic acid is the one most generally recommended, but any acid will answer; even vinegar will do quite well if a little alum is added to the bath.—D. F. G., New Hampshire.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

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Of Course We Will Help

We all know what the Y. M. C. A. is doing "over there", and we have been and are getting the information from the sources that count, from the boys themselves. And we know how these same boys hunger for a sight of the home scenes that gladden their hearts and strengthen their arms in the good work they are doing. And the Y. M. C. A. workers in France know what our trench-tired soldiers want and what they should have. All they have got to do is to tell us how we can do our part in supplying this want, and this they have done by sending out an appeal for lantern slides; and, you can be sure that in asking for these lantern slides, they are asking for something that the boys should have.

Send the slides, send them at once, and send the cream of your collection. If you have not the slides for a good collection available, make them up. See that each one has a title, and if you can, make up a series that will constitute a picture story, a series that will have some continuity. This is not important enough to justify delay or the falure to send home scenes of a miscellaneous nature, but it is advisable. Any American scene, taken anywhere from the Statue of Liberty to the Golden Gate, is a home scene to the soldier boy who may like to sing, to smoke, to eat, but finds the big joy in feasting his eyes on a bit of the country that he loves.

Experienced authors, lecturers and the like, have volunteered to index and arrange these slides in sets and prepare the necessary talks to give them the greatest possible interest. Practically every Y. M. C. A. hut or tent or dugout has its lantern and can show these sets when no other amusement is possible. Tired bodies, weary nerves, must relax; and, in the case of men such as ours, long hours of trench duty, if not more arduous work, demands more than the dull stupor of simple rest. And your best slides will furnish just what is wanted. The Y. M. C. A. workers have told us so and our own good sense tells us the same. We are only glad to know that our slides can be used, that they will be used, that perhaps over a million of the boys "over there" will be made more fit and eager by these picture glimpses of home that we will send them.

Get the slides together, the best that you have. Make new ones if you can make them quickly. Do it at once, as the sooner they are received the more good they will do. Enclose a note, saying by whom they were sent, and see that each slide has a title with a few words of explanation, if such will add to the interest. Do it as a duty, if you must, but do it as something that you are more than glad to do, if you can, and that ought to be easy. Send them prepaid, addressed to J. A. Rawson, Jr., National War Work Council, Y. M. C. A., 347 Madison Avenue, New York City; or, if you are a member of the I. P. A. Lan-

tern Slide Interchange, send them to the Director, Arthur H. Farrow, 51 Richelieu Terrace, Newark, New Jersey, as we advised last month. But do it, and do it quick. The boys "over there" do not stop to think it over or defer their work to another evening, when they may feel more like doing it, and you can do the same. Send the slides, the best you have or can make; borrow negatives to make them from if you must; and above all, do it now.

The Second International Salon at Los Angeles

The Second International Photographic Salon, under the auspices of the Camera Pictorialists of Los Angeles, will be held in the Gallery of Fine and Applied Arts, Museum of History, Science and Art, Exposition Park, Los Angeles, California, U. S. A., from January third to thirty-first, 1919. All pictures from the United States and Canada must be mounted, preferably on white or light-toned mounts, not to exceed twenty-six inches in their greater length; while prints from abroad should be sent unmounted. The back of each entry should bear, in addition to the name and address of its author, title and number, printing process used, and if for sale, the price. Pictures should be sent charges prepaid and addressed, The Photographic Salon, Museum of History, Science and Art, Exposition Park, Los Angeles, California, and an entrance fee of fifty cents must accompany each blank, the latter and all correspondence to be addressed, Ernest Williams, Secretary, Room 31, Walker Auditorium, same city. The entry blanks can be obtained, in the case of local workers, directly from this office, or from the Secretary, Mr. Williams, as above.

The success of the last salon held by this body of earnest workers assures us this, the second effort, will merit even more consideration from the pictorial workers of this and other countries. As the prospectus explains, the aim is to exhibit only that class of work in pictorial photography in which there is distinctive evidence of personal artistic feeling and sentiment. All pictorialists are cordially invited to contribute, and they should all make an effort to do so. Their work will be given every consideration and returned prepaid promptly at the close of the exhibition.

"Daddy" Lively Will Help

On another page in this issue, in our "Notes and Comment" department, there will be found an announcement, in the form of a letter from President Lively of the Southern School of Photography, calling attention to a free, two-weeks intensive course for the wives of photographers, who, through giving their services to the Government must leave their studios in charge of their better halves during their absence. All who know "Daddy" Lively,—and there are quite a few who do, will assure you that this handsome offer is well worth attention, and we are mentioning it here in order that it may not be overlooked by those of our readers to whom it is available.

Few lives wear out from overwork, but many do from the friction of fear and fret and worry. To the individual there is a double loss; he suffers the wearing pain of friction and loses the buoyancy and resiliency of life.—Herbert Edward Law.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D.

The Autochrome Plate in Photolithography

Among certain photo-engravers the Lumiere Autochrome plate is a very welcome addition to the means for producing color work; four-color typographic printing plates made from the autochrome have proved quite satisfactory. Many art subjects in the Metropolitan Museum, as well as in other institutions throughout the country have been made in this manner, that otherwise could not be made satisfactorily. Valuable paintings that cannot be removed must be photographed in the institution, and while oftentimes the director will permit the paintings to be taken from the wall and placed in the daylight, the making of a set of color-separation negatives is quite a task—unknown light factor; lack of dark-room facilities, etc. Furthermore, the finishing of plates made from separation negatives is most troublesome because the copy is not available for comparison as the work progresses.

But when a good autochrome has been secured, the operator has an original from which to make separation negatives and the finisher has a copy in colors to follow. Autochromes are not difficult to make, and when carefully exposed and developed, the fidelity to the original is most gratifying.

It seems strange to me that the lithographer has not made more of this valuable process. I do not happen to know of a single instance wherein it has been used. Possibly this is due to a lack of knowledge or a lack of appreciation, and it does seem that a few pointers would be welcome.

It is not necessary to discuss the details of exposure and development of the autochrome plate. The manufacturers supply full instructions and the photographic magazines from time to time give the experiences of many operators with valuable hints for overcoming little difficulties that occasionally crop up. It will only be necessary to tell how the photo-engraver works and points out what the lithographer should do.

When the photo-engraver has an autochrome, which is a transparency or positive, in color, he puts it in the camera and directs the light through it, using color filters to separate it into the necessary primaries. He uses process dry plates with the half-tone screen and gets negatives ready for the etcher. A good operator is careful to get the proper color filters and is cautious in his exposures, for unless all exposures are correctly made the good qualities of the autochrome will be lost. Such an operator also pays special attention to the lighting, knowing full well the danger of an intense, direct light from a powerful arc lamp. The colors in an autochrome are more or less fugitive, and many a good plate has been ruined through careless lighting.

It is conceded, of course, that even with the best autochrome, to begin with, and the most skilful separation of colors, there will be more or less correction necessary in the finishing of the plates, much of which is due to the half-tone direct screen negative, but it is quite certain that no more labor is required than would be necessary with separation negatives direct from the copy.

With the lithographer the procedure is entirely different, and I believe the following is unique. That it is wholly practical can be easily demonstrated, and, to one that knows, quite obvious.

First of all, two autochromes are required, one to be used as copy and one for the reproduction, but not both made in the same way.

The manufacturer's instructions say, develop the exposed autochrome for a given number of minutes; rinse off the developer, apply the reversing solution and afterwards re-develop in daylight. The result is a positive in the colors of the original. No fixing in hyposulphite of soda is required and but very little washing. Bear in mind, please, that this is a positive, and, as such, represents the original in color range and tonal values.

Just such a positive is required by the lithographer, which, as said before, is to be used as copy for the lithographic artist to follow, but not for the photographer to make negatives from.

A second autochrome exposure is made and developed to the right density, but not reversed. After development, the plate is to be fixed in the hypo bath. The result will be a negative, not a positive, and the colors will be complementary. If the subject was a lady in a red dress, that was red in the positive autochrome, this dress would be green in the negative autochrome, and likewise every color and tone would be in its complementary value—roughly speaking, the yellows, blue; the reds, green; the blues, orange. This complementary negative is placed in the camera just the same as the positive. The colors are separated into the primaries with proper selection filters in the same manner, but without the half-tone screen. The result is positive, a continuous tone rendering in black and white of the particular color selection. If the job is to be made in six colors, make as many positives, using special filters to get just the values required for each color. Of course, some skill and experience is necessary to determine the particular filters and varying densities, but as filters can be obtained in almost infinite variety, it is only a matter of selection.

It is well, also, in making autochromes to use a fairly large plate; while they are somewhat expensive, the cost is really immaterial. If the light-factor is obtained by means of a photometer before exposure, there is little danger of error and loss. Furthermore, if the camera used first is rigged properly, a very small trial plate, say 3¼x4, may be used as a test and is comparatively cheap. Little errors in exposure can also be easily corrected.

It is well to prepare a number of cover glasses by fixing an ordinary dry plate, just out of the box, thoroughly fixing, washing carefully and staining in various ways to get a very light blue or pink, and when needed, to bind one or the other to the autochrome. A slight tendency of the original to one shade or the other can be corrected with this tinted binder. It is also advisable to use a piece of mud groundglass in connection with the autochrome to diffuse the light and assure evenness of illumination.

It is wonderful how much can be accomplished by a judicious use of tinted cover glasses. One may even go much farther than just blue and pink. Sometimes yellow is helpful, and this or the other colors are made with the cheap packet dyes sold for dyeing purposes in nearly all drug and department stores. It is only to be remembered that correction is always with a color that is complementary to the error. That is to say, that if an autochrome is slightly under-exposed it will have a bluish cast in the whites which can be corrected with a yellowish-pink cover glass. Understand that "bluish" and "yellowish-pink" are relative terms. Judgment as to needs is determined visually. After suitable continuous-tone positives have been obtained the lithographic artist proceeds with brush, pencil and stomp to build up the various colors wanted in the same manner that he would do if working on stone. Everything is done than can be done, and only the skill or lack of skill on the part of the lithographer determines the final result.

The whole process is worthy the earnest attention of all lithographers. And although autochrome plates are made in France, and the U-boat has been a menace to shipping, we are yet able to get all the plates we need—at least all that are required at present.

"When this cruel war is over" I predict a big demand for autochrome plates, or plates of a similar character, by the lithographic trade, and it would be well for the wide-awake man to get on the job now.—A. C. Austin in *National Lithography*.

Some Thoughts on Colored Photographs and Photographs In Colors

An interesting and suggestive feature of the exhibition of war photographs at the Grafton Galleries is the general satisfaction expressed with the color effects produced. Many have commented on the realism introduced by the color, and probably not a few have thought, "If colored photographs can look as well as these, why should we trouble ourselves with elaborate methods of color photography?" We have been informed that some guileless individuals expected to see an exhibition of what they called "real" color photographs, but, from past experience of

such exhibitions on a much smaller scale, it seems to us that if these had been color photographs of the "real" variety, very few visitors would have been as satisfied with the results as they are now with the "colored" photographs shown, which seem to have come as a revelation to many. The fact seems to be that the art of coloring photographs is only just beginning to get a fair chance. The air-brush as a mechanical aid has perhaps helped it, but, more than that, it seems that the right people have not long begun to work at the method. Not long ago, almost anyone who could make a photograph seemed to think he could color it, and semi-mechanical processes, such as crystoleum, helped to foster this delusion. We had sometimes to put up with the crudely tinted lantern slide daubed over with aniline colors; sometimes with bromides colored, apparently, on the model of oleographs; while more ambitious, or "artistic" temperaments endeavored to color prints on what they considered to be Japanese principles. A very few people, who really know something about color, succeeded in getting fairly good results, but their work was swamped by the crowd of others who thought that coloring on a photographic basis was a simple operation, requiring no special experience of color or color manipulation. To anyone who has studied color, and who more especially has tried to paint in color, it is a very obvious fact that a true appreciation of natural color is possessed only by the few. It is a curious but indisputable fact that a large number of people who can see, understand, and imitate artificial color perfectly, are hopelessly at sea with natural color. Many students who can copy a painting almost exactly, will yet fail absolutely to paint a single tint correctly direct from nature, and many quite excellent copyists are really no good at all at painting from nature. Some teachers attribute this to the practice of copying, which they therefore discourage or forbid as well as they can; but, while copying is undoubtedly very bad training for the student, it seems certain that temperament has a great deal more to do with the inability to understand the coloring of nature; and many useful copyists, if they had never been allowed to copy, would never have been able to use color at all.

In the ancient days, when color photography of the "real" variety was an absorbing topic in the photographic world, and when numerous individuals were putting forward their own modified applications of the three-color process, it was only too painfully evident how many failed altogether to show any appreciation of color as it is in nature. The people who succeeded in reproducing "natural color" were very few indeed, and hardly any of those who failed seemed able to appreciate the fact that they had failed. Numberless examples of photographs in natural colors were really hopelessly unnatural, and the fact was so evident that it probably did more than anything else to cool off general enthusiasm for color work. A very great obstacle to the progress of color photography is the fact that the individual who does understand color, and can appreciate it, can nearly always paint, and therefore has the less need for color photography. That craft, in fact, is wanted chiefly by those who cannot paint from nature, and who are, therefore, mostly very bad judges of color. There are exceptions, of course, but there are not many. On the other hand, the man who can color, though he has no use for color photography, may very well be persuaded to color a photograph, and it seems that the best possible results in the way of color work are likely to be the combined efforts of the photographer and the skilled colorist, while possibly it may be found that the humble copyist may do excellent work in the production of replicas.

As regards the function of the real color photograph, it is difficult to say anything in view of the fact that a really successful paper process can hardly be said to exist. There are two or three processes, which in theory seem promising, but in practice seem to succeed only in the hands of a few experts, who tell us little about their failures. A really good simple process that could be worked with mechanical certainty would be sure to find uses, but I feel sure that the production of pictures, or even of pictorial records, will not be one of them; one reason being that the right men will never use it. The representation of still life objects or commercial articles is, however, a simpler matter, somewhat on a par with copying, and within the capabilities of less skilled workers, and here there should be a good opening for color photography. Even here I am not sure that three-color half-tone work does not fit

the requirements about as well as can be desired, while I certainly feel doubtful if any other process is likely to be invented that will have any advantages over first-class process work, as experts carry it out today. —C. Welborne Piper, in *British Journal of Photography*.

Pyro For Warm Toned Bromides

"Pyrogallol (pyrogallic acid, pyro), not a true acid, is obtained from gallic acid, which is found in the galls of trees. Stains the skin and hair, and was first used as a hair dye, for which purpose it is still largely employed. Oxidizes very readily so that in making solutions distilled or air-free water must be used."

So runs the definition of pyro in a manual of photographic chemistry, and everyone who has handled this developer must be familiar with the proclivities of its solutions for staining any organic substance with which it comes in contact, while in association with the alkali necessary to bring its developing powers into being pyrogallic acid was for long the universal developer for negatives, and is still, for certain classes of photographic work, preferred to the newer coal-tar-derivative developing agents.

The beautifully rich color of the negative that has been produced by pyrogallol when working at its best has led to a hankering after some method whereby this developer might be impressed into the service of the bromide paper worker, and it has been the writer's aim to devise a formula which would give a warm-colored print, not so warm as that produced by sulphiding, but very much more so than the tone obtainable by any adaptation of amidol, meto-quinone, and the others of that class.

When, however, one is dealing with a substance which is equally excellent as hair dye or photographic developer, the difficulties are considerable, and although it is possible to reduce staining of the paper to a minimum by the liberal use of preservative, the color of the resulting prints is still a more or less cold black, so that no compensation is obtained for the extra trouble and the risk of spoiled material.

Sodium acetate, the writer finds, has the property of producing the exact tone he has had in view, and the formula given below provides a clean working developer, staining neither paper nor fingers, the time required for development being four to five minutes.

Sodium carbonate	220 grains
Sodium sulphite	120 grains
Sodium acetate	70 grains
Potassium bromide	5 grains
Acid sulphite solution	5 drams
Water	4 ounces

To four drams of this solution add five grains dry pyro, and make up to two ounces with water; tap water is all that is required, the developer having only a faint discoloration after use, and even this may be avoided by the use of well boiled water. Give the tray an occasional gentle rock; do not agitate the developer unnecessarily; the image appears in about one minute, and continues to gain in strength with great smoothness; no loss of density occurs in the fixing bath, so that the print is removed as soon as the desired strength has been reached; wash a couple of minutes in running water and fix in

Hypo	2 ounces
Water	10 ounces
Acid sulphite solution	½ ounce

The acid sulphite solution consists of water eight ounces, sulphuric acid one-half ounce, and a quarter pound of sodium sulphite crystals being added. The bottle is shaken until they are dissolved; if it should happen that the hypo solution turns milky on the addition of this compound, no harm has been done, but the sodium sulphite has been defective, and a further quantity, say half an ounce, should be added to what remains of the bulk.

This method of development yields prints of a color which the writer finds completely satisfying if they are bleached in:

Potassium ferricyanide	20 grains.
Sodium chloride	200 grains
Water	10 ounces

Being afterwards sulphided in the usual way a very rich effect is produced, one which will no doubt be preferred to the tone obtained when the developer has been amidol or metol-quinol.—D. Ireland in *Amateur Photographer*.

A Good Dead Black

Make a strong solution of shellac in alcohol and then add thereto some fine vegetable black and a little turpentine. Only a little experimenting is required to show one about what proportions are needed. Too much shellac will give a little gloss and too little will prevent good adhesion and allow it to rub off too easily.

Absorbing Vibration

There are certain branches of photographic work in which vibration may work havoc. The process worker adopts an elaborate series of precautions against it, and the photomicrographer and the copyist may both find it necessary to take steps to neutralize tremors, if their work has to be done in a city or near a railway line. The motor bus has made such work impossible in some previously quiet London streets; and one photographer of our acquaintance has been compelled to resort to a swinging table for lantern-slide making by reduction on this account. The means he has adopted may be worth mention for the guidance of others. A long work bench carries the camera and original in the usual way; but this bench, instead of being supported from beneath on four legs, is slung from above, by two loops of rope which pass round the ends of the bench and round a bar which is fixed from side to side of the room, parallel with the bench. The ropes are not mere continuous rings, but in each side have had inserted four strands of strong elastic rubber. These act as springs, and absorb any slight tremor, which otherwise might do mischief.—*Amateur Photographer.*

The Position of the Illuminant in Enlarging and Projecting

It used to be stated in text-books, or, at least, implied by the diagrams given, that the correct position for the illuminant is such that the condenser brings light-rays to a focus at the first node of the objective. This idea has been proved erroneous, and, in fact, practically impossible with the ordinary uncorrected plano-convex compound condenser. The modern teaching is that the illuminant should be so placed that a small image of the light-source is formed a short distance ahead of the objective; while, if the latter is removed, a similar, but less defined, image is formed near or at the screen.

The rationale of the second method of adjusting the light, however, is seldom properly understood. Many have an impression that the condenser and objective form, in some way, a single corrected optical system, giving uniform illumination. This is correct as far as it goes, but it is not the real explanation, and does not meet all cases, for the reasons to be given.

Whatever may have been the case with early lantern slides, made for use with poor illuminants, the modern slide is not very transparent, neither, for that matter, is the average negative, still less an up-to-date cinematograph film. True, there may be a tiny patch or two of clear glass or bare celluloid, but these merely occupy an insignificant portion of the picture. What follows, then? If the negative, slide, or film is at best only semi-transparent or almost translucent, it must be regarded as to some extent constituting (in conjunction with the condenser) a diffusing medium, graduated so as to compose the various tones of the picture. Now, if the negative, slide, or film, with the condenser, is practically a graduated diffusing medium, it is evident that the chief object to be attained is to illuminate this from behind as evenly and as brilliantly as possible. Other things being equal, this end is secured by bringing the illuminant nearer, since, besides the increased light naturally due to greater proximity, a wider cone of rays then enters the condenser. The adjustment is much simplified in the case of the enlarger and the optical lantern, by the fact that the negative or slide is close to the condenser, and therefore receives the beam of light before any portion can come to a focus.

In the case of the cinematograph, where the film is a little distance away from the condenser, instead of being close to it, the factors are different, since the position of the illuminant is partly dependent on that distance, the beam of light having to be concentrated in a small disc on the "gate", in which is the film aperture or "mask". With that exception the same argument applies.

Both the old and the new method are easily experimented with. For the first, the position of the illuminant may be approximately found as follows. Focus the negative or slide sharply on the easel or screen. From the ratio of enlargement calculate the minor conjugate, and measure an equal distance from the slide or negative, marking it on the bench. This, of course, is the first node. Remove the slide or negative and also the objective, and move the illuminant till the best possible image of the light-source is focused on a white card supported level with the mark. Then replace the objective and re-insert the slide or negative. In practice, this arrangement will be found to give a very fair illumina-

tion, quite decently uniform, not because the old theory is anywise right, but from the fact, as before explained, that a slide or negative of average density acts, in conjunction with the condenser, as a diffuser, and is in effect an illuminated object, like a stained-glass window or a lit-up clock face. This method has, at any rate, the merit that the light is further from the condenser, and a cracked condenser less probable, though the maximum illumination is obviously not obtained.

Now, having tried the first way, without altering any of the other adjustments, gradually approach the illuminant to the condenser, watching the easel or screen. The increased light on the latter will at once be noted. When the most even result is obtained, remove the negative or slide and hold the white card a few inches in front of the objective. A small image of the light-source will be focused on it at a certain distance, showing that the second ideal adjustment has been reached. It will be found, however, that this distance may be varied somewhat by moving the light nearer to or further away from the condenser, without particularly affecting the evenness of the lighting, provided the slide or negative is sufficiently dense, which goes to prove the soundness of the conclusions here suggested.—A. Lockett in *British Journal of Photography.*

The Photography of Writing

Writing ink, as its usual denomination admits, is not black, but blue-black; and blue, as every photographer knows, tends to photograph much lighter than it looks unless precautions are expressly taken to obtain a different result. The consequence is that any writing done with ordinary ink does not look so black in the photograph as it does to the eye, and it is nearly impossible to get it quite black on a white ground. It comes blacker if photographed by artificial light than it does by daylight: and it is always blacker, both to the eye and to the plate, if it has been written for a few days than if it is freshly written. If anything is to be written to photograph, it is a great help towards getting a black result if some red ink is mixed with the black and then time is given for the writing to become as black as possible. An alternative is to use "artists' liquid black" or "process black" for the work, which gives an intensely black inscription: but there is the objection to these inks that they do not flow as freely from the pen as ordinary ink will do, and so they are apt to influence the writing, which, when the purpose is a facsimile, may be undesirable. In any case, full exposure and full development are necessary if the image is to have plenty of contrast: and it is sometimes helpful to give a brief reduction to the negative by means of ferricyanide and hypo, following up this, after thorough washing, with intensification.—*Photography.*

The Douglass Process of Cinematography

In the United States, as we have several times pointed out of late, a great degree of interest is evinced in the development of methods of taking and projecting motion pictures in color. We have referred in past issues to the Prizma process and Technicolor processes, and we now owe to the same technical journalist, Alfred S. Cory, same particulars just to hand of the experimental work of Leon F. Douglass of San Rafael, California, a demonstration of whose results has recently been given in New York. Mr. Cory, as shown by the advance proof of a lengthy article for the *Motion Picture World,* which he has sent us, evidently looks forward to what Mr. Douglass may achieve in the near future. It can scarcely be said that the process at present outlined constitutes any technical advance upon methods which are well known. The Douglass process is closely upon the lines of Kinemacolor —that is to say, it is a two-color process, in which the color combination upon the projection screen is obtained by superimposition of successive impressions in the observer's eyes. On the other hand, it differs from Kinemacolor in providing light-filters upon the film itself, instead of in the form of a rotating segmental light filter upon the projection lens. This, again, is a form of process which was demonstrated in London some three or four years ago. Nevertheless, it is interesting to learn that Mr. Douglass, like many other inventors in this country, is turning his attention to a subtractive type of process designed to yield color films which can be projected at the standard black-and-white rate of sixteen per second, and will not call for special requirements in the way of the projecting apparatus.—*British Journal of Photography.*

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Black Rubber Stamp Ink

A good black ink for rubber stamps is not hard to prepare, we are told, and it is much better for use on the back of photographs than the purple kind usually employed. It is made by dissolving one ounce of nigrosin in five ounces of alcohol, and then rubbing it up well with about twenty-one ounces of glycerine that has previously been well mixed with three ounces of water. Rub up the color in alcohol with a part of the water and glycerine, and then add the full amount of the latter as the mixing proceeds. As the name nigrosin is applied to several compounds and the solubility may vary, a trial should be made to determine the suitability of the ink for the purpose by spreading a little on a piece of thick cloth and using it as an inking pad for a stamp. If the edges of the letters are not clean and sharp, but seem inclined to run, there has been too much glycerine used and more of the dye must be added. If the letters are weak and lacking in distinctness, the ink requires thinning by the addition of more glycerine.

The Use of Turpentine

There is a certain studio a little away from the heart of the city, that I like to drop into, because it always looks neat and clean, and because there is always just a faint, clean odor of turpentine about. For a long time I thought this last was because the proprietor was always doing a little painting,—quite a natural thought, but as it persisted with no signs of newly painted surfaces, I tried to locate it in the bottle that contains the retouching dope. Finally I asked about it. And that is where I learned something about turpentine. Mixed with an equal bulk of linseed oil, it makes a fine furniture polish, one that will remove the white marks left by water on varnished furniture. A little added to a bucket of warm water and the broom dipped therein will result in both cleaning and restoring the colors of a rug or carpet gone over. If a little is sprinkled about, the moths will disappear and placed in their haunts, the roaches will decamp. A sponge moistened in turpentine is good to clean gilt frames, and a few drops on a woolen rag will clean tan shoes to perfection. Mixed with soap it will remove most ink stains from the clothing, and used alone, it will take out grease, tar and pitch. These are a few of its uses; a little rubbed on the gums will relieve toothache, and the list could no doubt be greatly extended. At any rate, a supply is a good thing to have on hand, particularly if one will but make it his business to see that it is used.

Fireproofing Cloth

In answer to an Oregon inquirer who wishes to treat flashlight bags, I know of no fireproofing compound that does not require a re-application every few months, if fireproof qualities are to be maintained. About as good a formula as one can use is the following:

Borax	1 ounce
Ammonium phosphate	8 ounces
Water	80 ounces

The cloth should be well soaked in this solution, wrung out and hung up to dry. The fabric does not become absolutely fireproof in the sense that asbestos is, but it will only smoulder instead of breaking into flame when brought into contact with fire or burning material.

The Defacement of Proofs

An Ohio correspondent wants to know a method of defacing proofs in such a way that the marking does not show until an attempt is made to tone them as published some years ago in one of the magazines. He has in mind, I believe, a method described in the *Bulletin of Photography*, and widely copied, which consisted of dissolving a little paraffine wax in benzine and with a fine brush applying this solution, in the form

of a cross, to the face of the print. This has the effect of preventing toning solutions from acting upon the protected parts of the proof, while being practically invisible. Of course, this does not prevent the untoned print being copied, but this last can be achieved, it has been said, by painting an invisible cross on the face of the proof with a solution of quinine sulphate. A little of the sulphate is dissolved in water with a little sulphuric acid added to assist. I have no personal knowledge of the effectiveness of either of these methods but they have both been published several times, and I have never heard of their utility being denied. A trial could easily be made, and the matter settled to our correspondent's satisfaction.

Copying Faded Writing

A Minnesota subscriber wants to know how he can restore or improve the contrast of some faded writing that he has been asked to copy. In our scrap-book we have a clipping that says most such writing can be renewed or restored by rubbing over it a solution of ammonium or hydrogen sulphide. Of course, much depends upon the nature of the ink with which the writing was originally done, but the suggestion is worth trying.

Dead Black for Cameras

Our Illinois correspondent is advised that the proper way to blacken the inside woodwork of his camera is to employ a mixture made by adding lampblack to a solution composed of celluloid dissolved in amyl acetate. Clean, spoiled roll film, free from gelatine, cut it into small bits, and then place in a wide-mouthed bottle of the amyl acetate. Giving the bottle an occasional shaking will cause the celluloid to dissolve in a day or two. Add enough of the celluloid to make the solution about the consistency of very thin paint and then stir in lampblack until about right to flow from the brush. This is the material used by some of the camera manufacturers, and it is found much better suited to the purpose than any composition having ordinary varnish as a base.

Local Reduction of White Drapery

An Oregon reader wants us to recommend a reducer suitable for reducing over-dense portions of portrait negatives, such as white drapery, white hat feathers, and the like, something that will have practically no effect upon the shadow detail, and something to be used locally. The following is a formula that is used by one of the most expert of our local portrait men. Take a twenty per cent solution of strong sulphuric acid and a twenty per cent solution of potassium permanganate. To use, take two drams of the first and one dram of the second and add eight ounces of water. Apply with a tuft of cotton. Too much permanganate or too little acid causes brown stain, but a weak solution of oxalic acid will remove it upon immersion of the plate. Another way to remove the stain is to place the plate, after washing, in the hypo bath just long enough to clear it of the yellow color. This, of course, necessitates a second good washing. The stain does not always appear, and is never very marked unless the proportions are quite wrong. The originator of this reducer, Namais, says that fixation after this reducer is advisable.

Capacity of Tank

In answer to another Oregon correspondent, would say: To find the capacity of your tank or other container, multiply together the length, breadth and depth in inches, using inside measurements and divide the result by two hundred and thirty-one. This will give the capacity in gallons and fractions thereof.

Eliminating Hypo

An Illinois correspondent wants to know if a solution of permanganate of potash has any value as a hypo eliminator. The chemical named serves only as an indicator as to the presence, or otherwise, of hypo, in prints or plates. It is used as follows: Take eighty grains of the permanganate and dissolve in four ounces of water, adding forty grains of either potassium or sodium carbonate. One or two drops of this solution will give a pale pink color to a pint of water. If, into this last is placed a plate or print that has been imperfectly washed, after the hypo bath, the hypo remaining therein will turn the pink of the solution to a yellow; or, if sufficient hypo is present, discharge the color entirely. Doing either of these, more washing of the plate or print is indicated as necessary. If the pink color is retained, it indicates that the amount of hypo present is so small that it is negligible.

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NOTE.—All stereoscopic slides sent to Director for the circulating sets must be mounted, titled, and show the maker's name and I. P. A. number on the back of mount. Notify the Director how many mounts can be used, and a supply will be sent you by return mail.

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NEW MEMBERS

4502—E. A. Falk, 709 9th and Hillside Ave., Valley Junction, Iowa.
Vest Pocket, 3¼x5½, 4x5 and masked smaller sizes, various papers, of landscapes, figures, Middle Iowa scenery and pictures of general interest; for mountain scenery, landscapes, figures or pictures of general interest. Wish correspondence with exchange. Would like to hear from various parts of the United States. Good work only. Class 1.

4503—C. W. Maddox, 112 S. Havana, Butler, Mo.
Class 2.

4504—Elden F. Horn, 1321 Newport Ave., Chicago, Ill.
3¼x4¼ and 6½x8½, developing papers, of anything of interest, excepting portraits. Have Yerkes observatory, would like some of Lick observatory for same, but all figures must be very subordinate. No figure studies. Class 1.

4505—S. L. Irving, Iroquois Falls, Ont., Canada.
Vest Pocket Kodak and post card, developing papers, of woods, lumber camps, hauling, river drives, paper mills, etc., all with reference to manufacture of paper; also micro-photographs of wood pulp; for interesting views, lantern slides preferred. Class 1.

4506—Evan Davis, Box 645, El Centro, Cal.
Stereoscopic views of scenery and some San Diego Exposition; for the same of anything of general interest. Class 1.

4507—George L. Kier, care S. L. Allen & Co., 5th and Glenwood Ave., Philadelphia, Pa.
Class 2.

4508—H. D. Jewett, Nashua, Iowa.
Class 3.

4509—H. P. Turrell, 1055 Bellows Ave., Columbus, Ohio.
3¼x4¼ and 5x7, developing papers, of miscellaneous views; for the same. Class 1.

4510—Herbert H. Provence, 700 Cleveland St., Greenville, S. C.
1⅝x2½ and 3¼x4¼, developing paper, of views and scenes about my home town, the surrounding mountains, etc., for similar views and scenes in the neighboring country. Class 2.

RENEWALS

1672—A. H. Fenn, 15 Colony St., Meriden, Conn.
Stereoscopic views of natural scenery; for the same. Class 1.

3703—W. C. Brass, Carlisle, Ark.
Class 2.

4366—Otho Webb, Wahroonga, Darr Creek, Jandowae, Queensland, Australia.
Class 2.

4384—Paul H. Graf, 29 St. Paul St., Buffalo, N. Y.
3¼x5½, 4x5, 5x7 and post cards of landscapes, country scenes, public buildings, street scenes, and anything of general in-

terest; for landscapes or anything interesting. Class 1.

CHANGES OF ADDRESS

654—H. E. High, 527 12th St., Denver, Colo. (Was Ellsworth, Kans.)

4249—Roy A. Phillips, 250 N. Valley Ave., Grand Rapids, Mich. (Was 1113 Turner Ave.)

4469—Max Rickett, 209 West Linn St., Marshalltown, Iowa. (Was New Providence, Iowa.)

WITHDRAWAL

4413—Wilfred Hickman, Fairmount, Ill. For period of the war.

CLUB NEWS AND NOTES

Club Secretaries and others will oblige by sending us reports for this Department

California Camera Club

E. M. Pratt of Sacramento, has an exhibition of exceptionally good pictures on the clubroom's walls this month. Mr. Pratt is one of the foremost exponents of the soft-focus lens, and his pictures show the beautiful quality that such lenses, rightly used, can give. His pictures are somewhat unusual, inasmuch as they depict river scenery and other subjects a little out of the ordinary.

As usual, following the club meeting this month, a very interesting set of lantern slides was shown. The class in lantern slide making is quite busy; regular instruction being given once a month, or oftener if possible, by one of the club members. Private demonstrations are also given on request.

The usual monthly outing was held August twenty-fifth, the trip being to Muir Woods. It was well attended, many bits of "Redwood color" being secured. The participants in the Lake County outing will return about September ninth. The workrooms of the club are at present well filled with members from the Yosemite outing, who are "finishing up their Yosemite stuff" since their return from that outing, and it is expected that there will be another busy season very soon, as a result of exposures made on the Lake County trip.

OUR BOOK SHELVES

"Photomicrography"

We have just been favored with a copy of the fourth and completely revised edition of this excellent little booklet that has been found so distinctly popular with those in need of an introduction to the subject of photography with the microscope. While the introduction very modestly declaims any intention, on the part of the publishers, to replace the regular text-books, it would seem that about all the problems involved in the photographic part of photomicrography are dealt with in a most plain and expository manner. The booklet is well illustrated and gives special formulas and detailed instructions for the use of the most popular and easily obtainable material used in this class of work. While it appeals only to those interested in photomicrography, its appeal is a strong one, and one that should be needed by all having such interest. The book is published by the Eastman Kodak Company, and they advise that they will gladly send copies to any of our readers upon receipt of fifteen cents, this charge being made simply to assure the booklet getting into the hands of the interested, rather than the merely curious.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

A Praiseworthy Proffer of Assistance

"Dear Mr. Clute:

"The draft and enlistment of many professional photographers leaves their studios in charge of their wives, who often have but little of the necessary photographic experience. The thought is suggested that a condensed two-weeks' training here at the Southern School of Photography would help over a serious difficulty in such cases. In order that we might do our bit in helping the noble boys of our profession, we will, with the approval of President Ryland Phillips and Secretary Charles Columbus of the Photographers' Association of America, set apart the first and second weeks of October for an intensive training, one condensing into that short period, a three months' course under the light and in the dark-room.

"Announcement of this free course has been made at the Kansas City, Missouri Valley, and the Ohio-Michigan Convention at Cedar Point, and the journals represented thereat are giving it publicity in their pages. We know that you will gladly call the attention of your readers to this offer through the pages of Camera Craft, as issued between now and October first. Accommodations can be had very reasonably here at McMinnville, and information will be promptly given to any who may write.

"Thanking you for your valuable co-operation, I am,

Fraternally yours,

(Signed) "W. S. Lively, President.
"McMinnville, Tenn., July 31, 1918."

Mounting Prints In Albums

The Tablet & Ticket Company, with headquarters in Chicago, New York and San Francisco, is putting out a sheet mucilage that is particularly suited to the mounting of prints in albums. It comes in two forms, in strips in a glass containing jar, and in book form, suitable for the pocket or the lady's work-basket; for it must be remembered that this adhesive has a multitude of uses. Practically all of the photographic stock houses are carrying this sheet mucilage, and those wishing to enjoy the convenience of a neat and clean adhesive that never fails to stick, should give it a trial. If your dealer does not happen to carry this article, look up the advertisement on another page and order direct from the manufacturer's nearest house. The firm also supplies a variety of very neat gummed letters that serve a wide variety of purposes, from titling a lantern slide to lettering an office door, and samples of these will be gladly sent.

A Splicing Machine

Within the year a well known manufacturer of laboratory apparatus will put on the market a complete splicing machine that will enable double the usual number of splices to be made in a given time. This machine, which has already been practically subject to laboratory use, makes a splice about thirty one-thousandths of an inch in length and with an increase of thickness of the film at the splice of about three one-thousandths of an inch. Thus the splice is made between pictures at the frame line, and actually occupies less space than the frame line. Instead of the emulsion surface of the film being scraped, the ends of the film are bevelled mechanically, only the bevelled ends being cemented. We have examined some of these splices, which are almost invisible at first glance, and they seem as strong as any.

The Artograph Screen

There has recently been put upon the market a time and labor-saving device, called the Artograph Screen; which, used in printing portrait negatives, gives a pleasing blending of the shadows and high-lights, combined with a stipple effect that makes retouching unneccessary. We all know how well nigh impossible it is to retain good texture and a likeness as well, when retouching negatives of elderly people or where slight under-exposure exaggerates lines and wrinkles and gives

a tired look. With the Artograph Screen all this is avoided, and one can make prints that preserve the character and natural modeling without the unnatural skin texture that excessive retouching produces. These screens will last a lifetime and save their cost, many times over, in a very short time. Write for particulars, addressing: The Artograph Screen Company, 500 Fifth Avenue, New York.

Liberty and Labor

The hope of labor lies in the opportunities for freedom; military domination, supervision, checks, bondage, lie in Prussian rule.

It is not through a German regime, but through democracy that labor is to receive adequate recognition and its realization of its rightful place in the world.

A Cooper Hewitt Bulletin

Bulletin No. 67, issued by the Cooper Hewitt Electric Company, Eighth and Grand Streets, Hoboken, New Jersey, gives data, specifications, and characteristics, as well as showing illustrations of the Cooper Hewitt Electric lamps of the indoor type for direct current. These lamps are particularly adapted to photographic work and such of our readers who are interested therein should send for a copy of this bulletin if their available current is a direct one. Where the more common alternating current is available, Bulletin 58 and 58-A should be asked for, as those deal particularly with the use of the Cooper Hewitt Lamp in portraiture and other photographic work.

Illinois College of Photography

The enrollment of the Illinois College of Photography, at the present time, contains the largest roster of women in the history of the institution. Photography cannot be surpassed as a vocation for them.

A letter from Raymond Wilmarth to Professor Killen of the B. C. P., states that he was one of the passengers rescued from the "Tuscania", and, since recovering from the shock, he has beeen in active service in France.

Mark Baughman, class of June, 1918, who, with his mother, made so many friends while in Effingham, writes from his home town of Kent, Ohio, that his friends are expressing much admiration for his display of graduation work.

J. Badell of Persia, class of 1917, who has been occupying a position in Ohio since completing his course, has joined the colors and will stand in the trenches side by side with other I. C. P. boys.

Messrs. Amos, John and Fred Viera, three brothers, class of 1916, have been called to the Photographic Department of the Signal Corps. The mother of these boys is certainly making a sacrifice for her country.

The Red Cross Fund subscribed by the Bissell Colleges made an excellent showing. The Colleges are endeavoring to complete a service flag that will contain as many stars as possible and would much appreciate any information which would assist in this work.

It is a sad duty to announce the death, July seventeenth, of Mrs. Russell Latshaw of Idaho Falls, Idaho. Mrs. Russell, during her residence in Effingham as a student, not only became a great favorite in the college, but she made a large circle of friends in the city as well.

Former classmates of Miss Katherine Collier, class of 1914, will be pleased to learn of her marked success in portrait photography at Everett, Washington. "Sunny", as she was called while in attendance at the school because of her extreme optimism, though walking with two crutches, has gained much in health, and is now able to both dance and swim.

Announcement cards of the marriage of Miss Helena Blankvoort of The Hague, Holland, and C. M. Marshall of Nevada, which took place in St. Louis, June twelfth, were received by the student body. Mr. and Mrs. Marshall will travel for some months, being now in Tulsa, Oklahoma. They were both very ambitious students, graduating with much credit to themselves in the June class. The many warm friends they made during their stay in Effingham unite in wishing them many years of happiness.

Lending Their Best Customers

The proceeds of the Liberty Loan, including the greater part of that loaned to our Allies, are being spent for American products—the products of our factories, our farms, our mines, and other industries. In lending to the United States the people of the United States are lending to their best and largest customer and obtaining the safest investment in the world.

XXV No. 10 OCTOBER, 1918 Price, 10 Cen

CAMERA CRAFT

SAN FRANCISCO
CALIFORNIA

Cyko Conserves Labor

"THE RESULTS of our recent trial of CYKO Paper," writes Mr. H. A. Reedy, of the Artcraft Photo Company, of St. Paul, Minn., "proved that our printers *could make a third more prints in a nine-hour day* than with the other standard paper. This means that in one year four printers could accomplish as much as six had previously done."

Cyko Conserves Electric Current

"IT WAS ALSO NECESSARY to reduce the wattage of the lamps, and this, together with the speed of the paper, meant much less electricity used. In this period of labor scarcity the financial saving should not be the only consideration. I do not, however, allow anything for the worry saved me in meeting my labor needs."

Cyko Quality Satisfies

"IF THE AMATEUR finisher will apply these proportions to his own costs, he will find that the price of CYKO is practically the same as that of other paper. Then if he believes as I do —that *quality of work* and worry about labor are worth something—he will not hesitate in making the change to CYKO Paper. As 'beauty is only skin deep' so the difference in the price of CYKO Paper is in the list price, and not in the final cost."

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ON THE CHANNEL
By L. A. GOETZ

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CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY
FAYETTE J. CLUTE, Editor
CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

VOL. XXV OCTOBER, 1918 No. 10

Photography's Part in the War

By Aron G. Grootenboer

With Illustrations by War Photographers

The part that photography is playing in the present war is an essential one, few realizing its actual importance. The camera today may well be considered as being the eyes of the army. Every time the reader encounters a newspaper reproduction of a war photograph he can, if he will but give it thought, realize the importance of these photographs in the making up of the history that follows this world's war. And, have you, as a reader, given thought to the dangers the war photographer must face in procuring these most interesting photographic records?

Aerial photography plays a still more important part, and some account of the means employed and the use to which the results are put will perhaps be of interest. The work is hazardous, as all flying naturally must be, but when the risks of being shot down are added thereto, and it is the greatest delight of the enemy to shoot down a camera plane, it becomes doubly so.

The use of the camera quite naturally followed the introduction of aeroplanes as an essential requisite in war equipment. The camera entered the field, when, in the fall of 1914, the British were being forced back and aeroplanes began to play an important part in the war. At that time the only information obtainable concerning enemy activities was that brought in by the observers in the form of maps and memorandums. Upon returning from one of these flights, an observer reported a large body of troops concentrated at a certain point on the enemy lines, although there were no definite indications of unusual activity on the part of the enemy in this sector. It was here sug-

gested that the observer take along a camera and, if possible, photograph these troops. This was done, and, upon returning, the photographs were produced, and from that time on photography took a part of ever-increasing importance in modern warfare.

Since then there has been great improvement made in both equipment for and in the practice of, aerial photography. The United States entering the war, she at once gave attention to this form of war activity, with the result that the Americans are today practically leaders in this new and important field. The cameras are mostly plate, using ones of the magazine type, permitting of as many photographs being taken as may be found necessary during an ordinary flight. Some of them are automatic in action, requiring only that the photographer pull a lever in order to take the photograph.

Orthochromatic plates are mainly used because of the haze which nearly always hangs slightly above the earth, a haze that the ordinary plate is unable to penetrate. In addition, these color-sensitive plates give rendition of the different colors of the earth. Some places may be red, others may be gray; and, when the camouflaging of the enemy is taken into consideration, this advantage of the color sensitive plates is important.

Upon returning from a flight, the photographer hastens the plates to a photographic laboratory, where the exposures are developed by a special process, fixed, washed and dried; enlargements or lantern slides being then made. The enlargements go through a special process, and in a half an hour the prints are on their way to headquarters; while, in special cases, the large guns may be already trained upon the positions photographed.

Anything of value at the moment is noted, and the photographs then placed aside to be compared, in a few days, when the position is again photographed. If, at that time, anything new is shown, it is known that the enemy is becoming active at that point, and it is then generally advisable to stop, if possible, such activity before it can be carried too far. One little incident that occurred "over there" in the summer of 1916, may serve to show the importance of aerial photography.

A photograph had been taken of a certain enemy location, and, as usual, hastily developed. It was then plotted or located, and in looking it over, there was found a small line extending from the first line trench into no man's land. The record was consulted, it was found that the line was a new one, and, of course, it was then up to us to find out what that line meant. Preparations were made for an attack on the position that evening, and, that being duly launched, the position was captured. What was found was a newly constructed machine-gun position, one from which, had they been given time, the enemy could have secured complete control of some of our trenches and placed us in a bad position on that sector.

Sometimes positions are so carefully camouflaged that it is almost impossible for the camera to search out all of the desired information. In such cases as these, the shadows often serve a good purpose. In a chance photograph there may be found a bunch of trees; and while it looks quite innocent, here and there through these trees may be seen a much worn foot path or a small gauge rail-

AN AMERICAN PLANE FLYING ABOVE THE CLOUDS—Copyrighted by Committee on Public Information

road. This shows that there is a gun of some kind hidden in the immediate vicinity, and here the artillery plays an important part. The bunch of trees is located on a map, the position telephoned to the nearest battery thereto, and the shells begin to fall. Aviators are by this time in the air directing the firing

THE FIRST PLANE USED BY AMERICAN AVIATORS IN FRANCE. Photograph taken on an aviation field Somewhere in France—Copyrighted by Committee on Public Information

of the guns, and usually a few well placed shots render the carefully hidden gun of the enemy useless. This done, the position is again photographed in order to show the result of the firing.

The shadows play an important part in this work, because they point more or less towards the north, according to the time of day when taken, and this greatly assists in locating the point photographed, on the map. A photograph showing a high building, a water tower, or the steeple of a church, will, in many cases, fail to show the steeple or the height of the tower or building by reason of the camera being directly over the subject when taken, for such pictures are taken oblique only on special occasions. But, the approximate height of the building or tower can be easily estimated by looking at the shadows that they cast. The area embraced by the photograph varies with the height at which the plane is flying at the time it was taken, as well as with the lens used. By a simple mathematical calculation, however, the area covered can be easily figured out upon a basis of the altitude and the focal length of the lens.

The dangers and hazards that must be faced by our war photographers are many and varied. The flying end, as we all know, is only in its infancy, and as yet by no means perfectly safe, despite the great strides that have been made in aeroplane construction. Flying is fairly safe as long as the motor keeps running, but the latter sometimes stops when most needed, with a sometimes resultant large drop that means all is over. In addition, there are the anti-aircraft gunners who are sometimes very clever and always able to make things rather interesting for the airman and his partner. Then the machine guns must be taken into account, for all photographs cannot be taken at safe heights, because of low hanging clouds that at times cover the battlefront. When Mr. Photographer is sent out to get photographs of a certain section he is expected to produce them, no excuses being wanted.

And finally, there are the enemy war planes to contend with; and, in this game the camera plane is almost useless, as it is not built for fighting battles in the air. For this reason a number of attending battle planes are sent along to act as a guard and protect the smaller machine that is to get the desired photographs. The writer has seen as many as ten planes accompany one camera plane sent out in order to get some particular information wanted. And each and every one of those attending planes was almost constantly busy keeping the path of the camera plane open and drawing artillery fire in their own direction, in order that the photographic information might be secured and brought safely back to our lines. This, dear reader, is the sport an aerial photographer is enjoying "over there".

The photographer working on the ground has his sport, as well. He stands a good chance of being gassed, caught by a sniper, or being hit by a stray bullet, not to mention sharing hardships of the men in the trenches. He is, however, quite cheerful and enthusiastic in his work, and can usually be found where the fighting is the hardest and the danger most pronounced.

A war photographer myself, I have tried to convey some idea of what aerial photographers are doing today, leaving it to the reader to judge for himself if the photographers in this war are not doing their share of the work.

Night Photography

By R. H. Argubright

With Illustrations by the Author

The possibilities of night photography when the light-reflecting power of snow, and also its required shorter exposure, help to minimize the effects of long timing, is shown in the pictures reproduced herewith. These were made by an amateur in Ogden, Utah; and, as the effect was obtained by the use of artificial lighting only, the results are even more distinctive than any that could have been obtained by moonlight. The negatives were all made with an ordinary 3A Eastman Kodak equipped with a stock lens and shutter. No special precautions of any kind were used, although care was taken to cover the lens when any moving light passed within the field in order to prevent the registering of the familiar white streak through the picture. The films were given, if I remember correctly, exposures of from ten to fifteen minutes, using stop f-8 and Eastman's N. C. film.

The photographs were made shortly after midnight and following a twelve-hour snowstorm. The snow was sufficiently damp to adhere to trees and other objects, adding materially to the "snowy" effect. Due perhaps to the relatively short exposure, the somewhat non-halation quality of Eastman film, to the fact that development was conducted with a strong developer well restrained and not

IT WAS A COLD AND DREARY NIGHT

NOT MANY PEOPLE WERE ABOUT THAT EVENING

carried too far, or due perhaps to a combination of one or more of these, the negatives show no halo around the lights. The registering of a halo or circular field of illumination around each light, and particularly those near the camera, is a condition seldom overcome in making exposures of this kind.

Sky and Clouds

Says George Clausen, A. R. A., in the *Strand:* "I do not think the beauty of landscape depends so much on the configuration of the ground or on the actual facts of any place as on the effects of light or atmosphere under which it may be seen. The finest view may look nothing at all on a bad day, and the most ordinary and commonplace scene may be made beautiful by its lighting. The chief element in a beautiful landscape (in Nature) is, I think, that there should be an extensive view, and the charm which this possesses for us is not so much that we can see so far and see so many things as that we can see the effect of light and of clouds upon the earth."

Another A. R. A., David Murray, one of the foremost landscape painters of the day, is quoted in the same article as saying: "I fully agree with Mr. Clausen as to the value of sky and clouds in a landscape." There is certainly food for thought in these two quotations, and the fact should not be overlooked that both these gentlemen have spoken of sky and clouds as they influence the landscape, and not as being in themselves an important part of the picture.

One cannot say that the rational is always beautiful; but the beautiful is always rational, or at least ought to be so.—GOETHE.

Titles that Illustrate

By A. K. Mehl

With Illustrations by the Author

EDITOR'S NOTE: *This article, we should explain, has been written in response to our repeated urging, and the illustrations, results of the author's rather limited photographic experience, have been supplied only under protest. Mr. Mehl is a busy professional man of Fort Wayne, Indiana, who somehow finds a little time to worship at the shrine of the ruby lamp, as well as woo the poetic muse. His love of Nature inspires his pen, and those who feel impelled to apply his suggestions as to titles, might well avail themselves of the material contained within the pages of his charming volume of verse, "Nature Lover's Poems", to which we called attention in our February issue.*

To see, to feel, and to create; this is the province of the real artist, and this truth must never be lost sight of by the art student, be his medium the photographic plate or the canvas of the painter. The mission of art is to give expression of ideas, thoughts, fancies, conceptions of the mind or emotions of the heart. If a picture conveys no meaning, it is entitled to no serious consideration. It may possess some charm in its own superficial portrayal,—and there is a certain element of beauty in all painting and good photographic work, but the higher aim of any form of expression is not to exhibit itself for

"I watch the day-flush leave the sky,
Ere night comes in its wake."

Or: "A gorgeous painting I behold
There by the sunset gates of gold."

Or again: "When fading daylight softly dies
And shadows silent wait."

its own sake, but to express the ideas and meanings of men. These expressions and ideas can often be more strongly impressed by being accompanied by well selected and appropriate lines of poetry, this being especially true in the case of outdoor or landscape scenes.

The world loves a pleasing title to a picture; such scenes as a sunset, a sunrise, the shadowy ways of the forest aisles, the ever onward rushing river, and the innumerable other outdoor subjects that appeal so strongly to the photographer. The simple, hackneyed title, "Sunset" beneath a print in monochrome, one in black and white, does not impress as would the same picture with some such lines as the following, used as a title:

"When sunset skies are all aflame."

"Rapt glory of the sunset skies
Out by the western gate."

"O love, they die in yon rich sky,
They faint on hill or field or river."

"Never did sun more beautifully steep
In his last splendor, valley, rock or hill."

"A gorgeous painting I behold
There by the sunset gates of gold."

Such titles paint the scene and make it pleasing to behold. We see the glowing color like the flaming fires of a forge; our hearts are full of wonder

"I want to dream, to be alone,
Where silence speaks in undertone."

Or: "O, what memories it brings
Of days that are no more."

"In the waters brightly gleaming,
Like inverted forest seeming."

Or: "Then again more slowly flowing,
Like a mirror shadows showing."

and awe. Or we see a mass of purple clouds, shot with crimson and orange, with long streamers of gold feeling their way through the breaks in the cloud banks, while the edges are laced with silver. And the picture of a sunrise will take on added interest in the same way. If it be that of a forest scene,

"But speaks the gentle tenderness of peace
Of Nature's sweet unselfishness."

Or: "For summer's hand has rocked the world to sleep,
And smoothed the wrinkles in her brow of care."

we might select still other lines that were appropriate, something like the following examples:

"The woods, the grand old woods,
The temples built with God's own hands."

"The ancient oak stands proud and high,
A monarch of the timberland."

"Those green-robed senators of mighty woods—
Tall oaks branched—charmed by the earnest stars."

"Massy and tall and dark they stand,
Fit shrine for the worshipper to behold."

If the subject be that of a river scene, lines something like the following might wake the imagination to behold the infinite variety of scenery where the river weaves in and out of the hills, with sun and shadow forever alternating. Swift and impetuous the current sweeps around the bends, under the high bluffs and against the low shores and reedy shallows,

"Then again more slowly flowing,
Like a mirror shadows showing,

as it sweeps along in silent majesty on its way to the ever restless sea.

"The slowly flowing woodland stream,
Where lonely shadows silent dream."

"The placid stream, just like a dream,
Goes slowly drifting, drifting by."

"And the roaring waters turbulent,
Forever hurried on."

And in like manner we can find poetical lines appropriate for almost any outdoor picture.

In any bookstore or library can be found volumes of verse by poets with a love and appreciation of outdoor life and its beauties. The works of Madison Cawein, John Vance Chaney, James Newton Mathews and others, will all be found rich stores from which much of value can be secured. My own modest volume entitled, "Nature Lovers' Poems", has been made the source of a number of poetical titles for the accompanying pictures, photographs of my own taking for which I claim no artistic merit, but introduce merely to show, if such they will, the advantage of a poetic title in illuminating even such amateurian productions.

And the photographer should explore these mines of nature portrayal in verse with an appreciative mind, with a mind alive to the suggestions the lines may have of subjects for future pictures. As one reads, the word painting of the poet will suggest pictures that the camera can portray, perhaps of a certain subject or location that at once comes to mind. Even if this last does

"The slowly flowing woodland stream,
Where lonely shadows silent dream."

Or: "The placid stream, just like a dream,
Goes slowly drifting, drifting by."

not occur, the mental picture will remain and its counterpart in nature will be all the more quickly recognized as a good subject when found later, perhaps observed where it might otherwise have been passed by and overlooked.

Deep in all of us is the love of nature. We need the imagination of the poet to restore to nature her glory, to transfigure her with subtle meanings, to unfold for us the flight of the setting suns and the restless seas. Imbued with

"I love the woods, the grand old woods,
The temples built with God's own hands."

a love of nature and her varying moods, he paints his picture, employs his art, through the medium of verse, of words. The artist of the camera, as well as the brush, seeks to convey the same ideas, the same sentiments, the same thoughts, the same inspirations, in other mediums, the photographer in the lights and shades of the photographic print. He can profit doubly by what the other man has done. He can increase the illuminating quality of his own work by adding thereto the word painting of the poet, just as the pages of verse are frequently graced by the work of the artist. And, just as the painting or other production of the artist often inspires the poet, the artist can gather inspiration from the versification of his fellow worshipper at the shine of nature.

Patriotism

I mean to stand upon the Constitution. I need no other platform. I shall know but one country. The ends I aim at shall be my country's, my God's and Truth's. I was born an American; I shall die an American; and I intend to perform the duties incumbent upon me in that character to the end of my career. I mean to do this with absolute disregard of personal consequences. What are personal consequences? What is the individual man, with all the good or evil that may betide him, in comparison with the good or evil which may befall a great country in a crisis like this, and in the midst of great transactions which concern that country's fate? Let the consequences be what they will, I am careless. No man can suffer too much, and no man can fall too soon, if he suffer or if he fall in defense of the liberties and Constitution of his country.—DANIEL WEBSTER.

The Home-Made Flash-Cabinet

By W. G. Earle

After reading the article under the above heading in the August issue, the query quite naturally presented itself as to whether or not Mr. Ward felt quite sure that in constructing his own flash-cabinet he had done the wise thing? Had he made a saving proportional to the disadvantages with which he handicapped his work by omitting what I regard as the most vitally important features of such a device, instead of purchasing a regular flash-cabinet, such as the popular "Victor", manufactured by the Jas. H. Smith & Sons Company of Chicago?

Economy doubtless impelled Mr. Ward to construct his own cabinet, and it may be he also found some pleasure and satisfaction in the exercise of his ingenuity and mechanical talents. However, I cannot commend Mr. Ward's plan of building his own cabinet, and particularly one having its most serious

limitations. Yet his article is a good one, as showing what excellent work can be done by means of the flash, even when used with such a device.

Mr. Ward's cabinet, being open at the top, is deprived of what I consider the most vitally important feature of such a device, namely, control of the resultant smoke. His cabinet, with its open top, permits the escape of all the smoke from each flash into the operating room. It is well known that the heat generated by the combustion of the powder, rises and carries with it the smoke produced; and, when the ceiling is reached, the smoke spreads, then settles. Doing so, the accompanying unpleasant odor permeates the entire atmosphere of the room, while the dust into which the smoke finally condenses, settles upon everything. It is also well known that clear, transparent shadows cannot be produced in an operating room in which the atmosphere is clouded with smoke, as must be the case immediately after one or two flashes have been made in an open top cabinet. Cleanliness, as well as the breathing of a pure atmosphere by both operator and patron, to say nothing of clear, crisp negatives with transparent shadows, all demand that the smoke be absolutely confined or conducted out-of-doors through a pipe extending to a chimney or window.

There is but one other method of eliminating most of the smoke, and perhaps Mr. Ward used it, though he does not say so in his article. By having an opening in the top of the operating room, equipped with a fan or other artificial draft, the smoke is assisted in escaping out of doors as it rises, and little or none remains to descend.

Another disadvantage of the cabinet in question lies in its lack of adjustability as to height and angle of the front. Raising and lowering the light within the cabinet can, only to an extremely limited extent, meet the requirements of the operator who wishes to secure the full possibilities of the flashlight in the matter of varied and pleasing lightings. The ability to raise and lower the cabinet, as well as to change the angle of its front, plays a very important part in securing a variation of effects.

It is quite true that an operator, working by daylight in the ordinary way, does fine work and secures varied effects without the ability to change the angle of his skylight. But he secures the different angles of lighting by employing the light from a higher or lower portion of the skylight and by moving his sitter nearer or further away from it, a method that is obviously not available with a cabinet having a front of only about twenty square feet, and that front not adjustable either in height or angle.

It is much more easy and convenient, when working for varied lightings, to be able to change the angle of illumination by the simple expedient of changing the angle of the cabinet front. It is also a great advantage to be able to move the light and watch the effect, instead of moving and disturbing the subject. The desired effect is secured in a much shorter time when such adjustments are provided for as in a well designed cabinet.

In writing this, I am not attempting to discourage the use of home-made cabinets by those who wish to experiment with the flash before investing in a more satisfactory arrangement; neither do I wish to discourage the construc-

tion of home-made apparatus, particularly such as is simple or inexpensive, but I cannot let the opportunity pass of calling attention to the fact that, where the best results are desired and convenience of working is an object, it is much more satisfactory to purchase a flash-cabinet made by a firm that is not only equipped to build and finish it properly, but one that has made an exhaustive study of its necessary features. Such is particularly advisable, when the cabinet has the advantage of several years of practical use by a large number of photographers to endorse its claims.

The shortcomings that I have pointed out are such as have probably been discovered by Mr. Ward, and I have no doubt but that he will later discard his device and take the same course as I did, as described in my article in the May number. I have since learned that the manufacturers of the Victor Cabinet derive virtually no profit from its sale, but supply it, practically at cost, to encourage its use, and thereby increase the sale of flash powder.

In taking up this matter as I am doing, I am prompted, in common with Mr. Ward, by a desire to impress upon my fellow photographers the advantage of the flashlight as an illuminant in portrait work. I have called attention to these shortcomings of Mr. Ward's cabinet merely to the end that those who follow his plan may avoid these or similar defects in construction, and this to the end that they may not be dissatisfied with their results and condemn the use of flashlight, for portraiture, simply because their initial attempts have not been made under favorable conditions.

Mr. Ward is, no doubt, an operator of exceptional skill, and he is, perhaps, securing results with his home-made cabinet that another or less experienced operator might hardly hope to obtain except with a cabinet of more correct construction. In this connection it may be worth pointing out that the prosperous photographers are nearly all men who are equipped with the latest and best apparatus the market affords, enabling them to produce the best results with the least expenditure of time and trouble.

I am sending herewith a few examples of flashlight portraiture that were made with a cabinet of proper construction; and, while Mr. Ward might be able to duplicate them with his home-made cabinet, lacking in smoke control, as well as in adjustability as to height or angle of front, I feel quite sure that he would find it a little difficult to do so with that degree of ease and certainty under which they were produced with a Victor Cabinet.

Photographs of Lightning

By Ferdinand Ellerman

With Illustrations by the Author

On the night of June thirtieth, there occurred one of the most violent electrical storms that has ever visited Southern California. This was the culmination of several days of sultry conditions.

The aerial fireworks began about ten o'clock, at Pasadena, and continued at intervals during the entire night and into the next day. There was very little wind or rain, and the storm centers traveled very slowly. At one time, about two-thirty A. M., six distinct centers of lightning discharges could be detected, covering an area of about forty miles square. The induction over the high-lines and the telephone wires was very heavy; hundreds of telephones were put out of service, and at the sub-station of the high-lines the lightning arresters would go up in an immense glow. It was a wonderful sight from Mount Wilson, where the accompanying photographs were taken, to watch the valley, with Pasadena in the foreground, Los Angeles in mid-distance and the beach towns as an outer border. I was fortunate in seeing the two flashes come down at El Segundo, and strike two oil tanks and set them afire. Then there would be immense glows at the sub-stations when the lightning arresters would burn up, and the sections of the lights in Pasadena would go out. At the Mount

PRINT FROM NEGATIVE C 162

Wilson Solar Observatory, a 15,000-volt transformer was burnt out, and there were many forest fires started by lightning hitting trees and setting them burning.

It is not often that one sees lightning flashes, or photographs of them, which show the entire length from their emergence from the clouds to their contact with the earth, and here is where a mountain site comes in to advantage. The camera was about forty-eight hundred feet above Pasadena, and I should judge that the clouds were five thousand feet above the mountain.

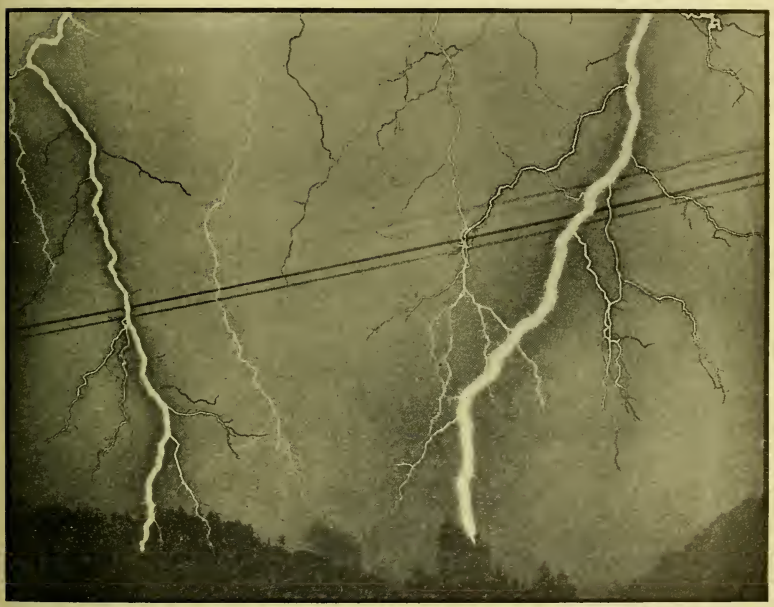
The lightning was very intense, and at times very localized, so that repeated discharges would strike in a comparatively small area.

PRINT FROM NEGATIVE C 163

The photographs seem to me so unusual, and have created such an interest to the electrical and meteorological experts, that it has seemed to me proper that the photographic fraternity should become acquainted with them.

I will refer to the photographs according to their plate numbers. C 162 shows ordinary flashes of great length. Note the peculiar smudge where they emerge from the cloud. Some of the Pasadena lights show, as do a few branches of *dark* lightning. Distance to point of striking the earth, five to seven miles. C 163 is interesting, as it shows the glow due to the fire which the right-hand flash started, also another glow from some fire started previously. The center flash struck a large pine tree and shattered it. This one is eight and a half miles from the camera, while the one starting the fire is about ten miles.

The next two photographs are of unusual interest, as they show in detail bright flashes, bright flashes and branches with dark borders, and dark flashes. In C 164 it will be noticed that the very heavy flashes have a hazy dark border or background, while the branches from them are bright with dark edges and terminating in dark tips. In the last exposure, C 165, we have a most remarkable collection of flashes. The "dark lightning" is extraordinary, and even the illumination on the fog which covered Pasadena at this time (four-thirty A. M.), is dark or negative in most cases. Now the interesting thing is, why do these flashes exhibit a negative effect, instead of a positive one. There is no such thing in reality as "dark lightning" so far as I am aware, and if the flashes



PRINT FROM NEGATIVE C 164

are bright to the eye, why do they photograph dark. Here is a case where the photographic plate may be said to lie. But while it fails to record the lightning as the eye sees it, may it not give us other information about the flashes which are of scientific value, and really worth more as such than merely accurate records of the path and intensity of the discharge?

No doubt many who see these photographs will say that the "dark lightning" is due to photographic reversal. That there is a reversal is true, and that it is photographic is equally true, but it is not due to the ordinary causes of photographic reversal, but is in all probability due to "light shock", which is produced by very short duration of the flashes, which renders the silver salts in the film incapable of being developed, and if the plate is fogged or the

background illuminated by other flashes, they appear reversed. In the *Astrophysical Journal,* University of Chicago Press, Volume Seventeen, June, 1903, page 361. Professor R. W. Wood of Johns Hopkins University has a paper which describes this reversal effect. I will quote one paragraph: "The Clayden effect, which is the type chiefly to be dealt with in the present paper. This occurs when an exposure of about one-thousandth of a second or less is given, and the plate subsequently fogged by exposure to diffuse light before development. If images of electric sparks are thrown on a plate, and the plate then exposed to the light of a candle for a few seconds, the spark images will develop reversed, which is not the case if the exposure to candle light precedes the impression of the spark images."

PRINT FROM NEGATIVE C 165

Now if this explains the cause of "dark lightning", the interesting thing is, what conditions are there which make certain flashes so much shorter than others so as to produce this effect?

All of the above reminds me of a remark our friend, F. Dundas Todd, at that time editor of the *Photo Beacon,* made to me one day, as follows: "There are a great many things in photography of which we know absolutely nothing whatever about". And I have thought of that remark many times since, and that was in 1902.

If any readers of this article have photographs of "dark lightning" comparable with these illustrated, I should like to get in communication with them.

O man, joy taken from another cannot live. It dies when it leaves the victim, and hangs a dead weight upon your soul. It is only when we give, that we really live. It is only when a man forgets himself * * * that God possesses him.—"*The Foot of the Rainbow.*"

Photographing An Eclipse

By Albert M. Shaw

With an Illustration by the Author

The eclipse of the sun on June eighth of this year afforded the camera enthusiast an excellent opportunity to make some interesting experiments; and, whenever something of this kind occurs, something that can be photographed, one who enjoys making use of his camera in a really worth while manner should accept the opportunity. Whatever equipment he may have, supplemented by his own ingenuity, should be employed in an effort to get the best results obtainable under the circumstances. The pictures secured may have but small value and be far inferior to results secured by others who are better equipped, but much will be learned and no little pleasure derived.

An ordinary kodak may be used for photographing the sun if a deep enough screen is used on the lens to hold back the excess of light, as proven by some very commendable photographs of the eclipse made in that way, although the images secured were rather small and necessitated subsequent enlarging. This last, judging from some results I have seen, does not always result satisfactorily; at least, there is a good deal of uncertainty about working in such a manner. With a filter of sufficient depth and the exposure short enough, success might be achieved, but otherwise halation would no doubt spoil the result. The exposure is so largely guess work that a camera having a focusing screen is desirable for the reason that one can judge the appearance of the image on the ground glass and be more assured of definite results.

The equipment that was used to make the illustrations herewith consists of an ordinary 5x7 view camera carrying a telephoto lens, fitted with a four and one-half times filter. A tilting tripod top would have been a convenience, as, with the ordinary tripod, pointing the camera sufficiently skyward to include the sun and still give a reasonably free access to the groundglass, was found a problem until the aid of a nearby embankment was invoked. Owing to the

extremely short exposure required, a slow plate would probably have given better results, but as only a medium plate was at hand that was used.

To one who has not previously studied the matter, the shortness of the exposure, as suggested by the brilliancy of the image, may cause some surprise. After setting up my camera and viewing the sun's image on the groundglass, I decided to close the diaphragm to the smallest possible opening, about one-sixteenth of an inch, and to give the shortest possible exposure, with my shutter. This last has a rating of one-hundredth of a second, but its fastest speed, in reality, is probably much slower. Now, a sixteenth-inch aperture for a lens of six inches focus, such as my positive lens, would be equivalent to f-96, but the magnification of eight diameters of the telephoto attachment, made the combination equivalent to a lens of forty-eight inches focus, and therefore the sixteenth-inch aperture became f-768. If the reader be fond of figures or desires to have the U. S. value, he can square this f- value and divide by sixteen, finding its value to be U. S. 36,864.

In the reversible back of my camera I used both a horizontal and a vertical septum so that but one-quarter of the plate was exposed at a time, making four exposures on each. I believe, however, this protecting of the unexposed three-fourths of the plate each time was an almost unnecessary precaution. The exposures were so extremely limited that little or no fogging of the plate would have occurred had successive exposures been made with the entire plate uncovered. Even shorter exposure would have been sufficient, under the conditions, to have given good, clear-cut negatives, and this means that a smaller stop or a still deeper filter could have been used, had either been available.

If an ordinary lens were used, one without the telephoto-element, some means of making a still more rapid exposure would be necessary, namely, a quicker acting shutter, as the shorter focus of the lens would make a corresponding increase in the f- value of the diaphragm. A slow plate would help some in this direction, but alone would scarcely be sufficient.

The first picture shows the eclipse just beginning, about 3:15 P. M., advanced time, near latitude 34 degrees north and longitude 118 degrees west. The second shows the eclipse at about its maximum, an hour later, while the last shows it nearly ended, about 5 P. M. These, as I have said, are the images given by a six-inch lens, magnified about eight diameters. Several other exposures were made at different stages of the eclipse, some at different magnifications, but all with practically the same results.

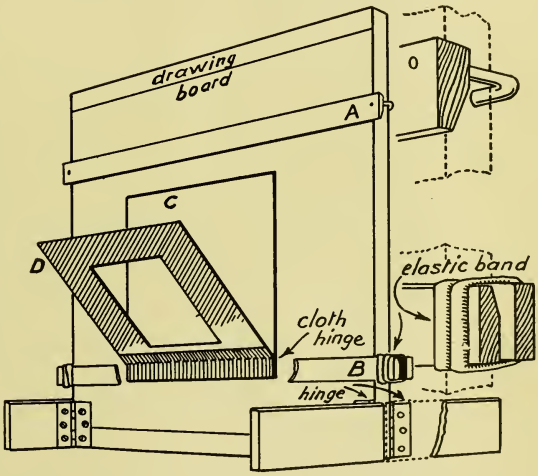
Some interesting deductions were made from the experiments. A plain plate, preferably a slow one, will do very well for this class of work, if a deep filter is used and a very short exposure given, with subsequent development carried no further than necessary. In this case an ordinary smoked glass or a piece of fogged plate, used as a filter, would have given satisfactory results. A double-coated plate permits a more full exposure without danger of halation, but a backed plate serves the purpose better and consequently gives the clearest cut results. Halation is the greatest trouble to be overcome, and this is best achieved by cutting out all the excess of light possible.

An Enlarging Convenience

By Edgar Felloes

Readers of CAMERA CRAFT who have hitherto used pins to secure their bromide paper to the easel when making enlargements, will find a very efficient contrivance for holding the sensitive paper, illustrated herewith. The writer is indebted to Mr. Mathieson in *Photography and Focus* for the suggestion, and having made some minor changes to suit his own requirements is pleased to draw the reader's attention to this useful device.

The main feature of Mr. Mathieson's idea lies in the paper carrier: It consists of two pieces of cardboard of the same size, indicated in the cut by C. D. A strip, one inch wide, is cut from one end of D, and this strip is glued to the corresponding end of cardboard C to later form part of a hinge. In D, an opening is cut a little smaller than the bromide paper to be used. This done, the edge from which the strip was cut is attached to the one-inch strip by means of a piece of cloth or binding tape, to form a hinge as shown in the drawing. Several of these should be provided to accommodate the various sizes usually made.



The bar, A, is merely a strip of wood, beveled on its lower edge and carrying a curtain hook near each end. Care should be taken in placing these hooks to have them just far enough apart to accommodate the width of the drawing board and they should be screwed through the strips far enough for the hooks to engage the back of the board, after which the projecting ends of the screws should be filed off flush with the face of the strip. These hooks should afford sufficient bind or friction to hold the bar in any position to which one may slide it on the board.

Bar B consists of two wood strips, one in front and the other at the back of the drawing board or easel. Elastic bands wrapped around the ends of

these strips give sufficient grip to the board to enable the front one to hold the cardboard carrier firmly in place. The front strip, B, which should be beveled on the inner side of its upper edge, is shown in the drawing as broken away near the center, to disclose the position and use of the cloth hinge on the cardboard carrier. The detail drawing of the ends of strips A and B will help to make the description clear.

In use, after locating the position and size of the enlargement, select a suitable carrier and push its lower edge behind B, previously slid up into position. Allow the cut-out board, D, of the carrier to fall forward and rest upon the upper edge of B, while the bromide paper is being adjusted. It is good practice to have some guide lines drawn on card C to assist the correct placing of the sensitive sheet to insure the proper width and uniformity of the margins in the finished enlargement. Having done this, close back the cut-out board D and slide the strip A down into position so that its beveled lower edge will hold the two cardboards tightly together.

If reference is made to the drawing the reader will notice that a hinge is shown on the inner side of the further base support. There should be at least one pair of these hinges, screwed to the front of the easel and to the respective supports so that, sawed in two at the proper place, the ends of the latter can be folded back when not in use. By using two pairs of hinges and sawing the base supports in two half way between each pair, as shown dotted in on nearest side, both back and front ends of supports can be folded flat and a greater compactness will be secured.

Another convenience is a special negative to be used in place of the one to be enlarged from, when focusing. Some find it difficult to get a sharp focus when enlarging, and frequently a negative that is slightly out of focus will cause considerable annoyance. To make this special negative for focusing, expose a small plate on some bold lettering, such as a large sign. Or, take an unexposed plate, fix, wash and dry, and then draw clear black lines on the gelatine side with India ink. When enlarging, after having roughly focused for size, remove the negative and insert the special focusing plate, taking care to have its emulsion side face the same way as will that of the negative to be enlarged when the latter is replaced. Securing a sharp focus will be found quite easy and all doubt on that point removed.

A Focusing Hint

By Cyril G. Waters

I was much interested in the article "A Special Problem in Depth", that appeared in the "Digest" department of the August number. The perusal of it has given me a new viewpoint that may be of interest to other readers. I refer to what may be called: A special case of a special problem, viz.: the commonly occurring case of a subject whose nearest point is at a known distance and whose farthest point is at infinity; for instance, a landscape with bushes in the immediate foreground or a mountain view with a close-up figure. The problem is, what is the largest stop that can be used and still get all parts of the subject in focus and where should the focusing scale be set.

Now, according to the writer of the above mentioned article, the distance at which the camera should be focused is found by taking twice the product of the distance from the camera to the nearest and farthest points of the object and dividing the result by the sum of these distances. But in our special case, the greater distance being infinity, the harmonic mean, as it is called, becomes twice the lesser distance. This brings us to an important conclusion, viz:

To get all parts of a landscape in focus, the scale should be set at a point equal to twice the distance to the nearest object which is required to be in sharp focus. The other phrase of the problem is: What is the largest stop that can be used? The writer of the article takes a circle of diffusion of one-two-hundredth of an inch, but for convenience of manipulation, I shall take one-two-hundred-and-fortieth of an inch. This gives us for his formula:

$$\text{f- number} = \frac{240\ f^2 b}{u\ d}$$

f = Focal length of lens in inches.

b = Distance of the plane in sharp focus beyond the nearest point of the object.

u = Distance to the nearest point of the object.

d = Distance from the plane in sharp focus to the front principal focus of the lens.

In our case, u and b are equal and may be cancelled. Also, for short-focus lenses, d is so nearly equal to twice the distance from the lens to the nearest point of the object that the difference may be disregarded. Therefore, if we call the distance, in feet, from the lens to the nearest point, D, the formula becomes:

$$\text{f- number} = \frac{10\ f^2}{D}$$

Let us take a couple of actual cases. I have a vest pocket camera with focusing sleeve. The lens has a focal length of three and one-half inches. I wish to take a landscape with a figure at six feet. By the first rule I set the

focus at twelve feet. For the stop, the square of three and one-half being about twelve, we have: $\frac{10 \times 12}{6} = 20$, indicating f-22 as the nearest correct stop.

Another case: I wish to take a row of sweet peas with some distant trees in the background. I am using a plate camera with a lens having a focal length of eight inches. The peas are ten feet away. I therefore set the focus at twenty feet; and, using the formula: $\frac{10 \times 8 \times 8}{10}$ find the stop required is f-64.

Previous to reading the August issue it was my practice to focus on infinity and then stop down until the nearest objects were in focus. I have given the other method a trial and find that I can use larger stops, and therefore shorter exposures. Besides this, it enables me, with my pocket camera, to be sure that I am using the right stop to get the required depth, instead of guessing at it as formerly.

The whole function of the artist in the world is to be a seeing and feeling creature; to be an instrument of such tenderness and sensitiveness that no shadow, no hue, no line, no instantaneous and evanescent expression of the visible things around him, nor any of the emotions which they are capable of conveying to the spirit which has been given him, shall either be left unrecorded, or fade from the book of record.—RUSKIN.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

REMOVING OLD PUTTY: Last week I had occasion to insert a new pane of glass in my side light, and in order to remove the old putty, tried a plan advised in *Abel's Weekly* a short time ago. It consisted of painting over the old putty with nitric or muriatic acid, which softens it in about an hour so that it is easily removed. It worked like a charm, but I might add that the brush used was also softened and easily removed. Next time I will employ an improvised brush of some kind, although I could, no doubt, have saved the one used had I immediately washed it in some kind of an alkaline solution.—A. S. D., Florida.

A GOOD REDUCER: Dissolve twenty grains of permanganate of potash in sixteen ounces of water, and then add, slowly, thirty minims of sulphuric acid. This should be kept from the light as much as is convenient, but can be used over and over as long as effective. Simply immerse the negative until the desired result is secured, then wash enough to stop action and allow to dry.

There is practically no tendency to stain or give uneven patches, and the results will please.—C. V. B., New Mexico.

NUMBERING ONE'S NEGATIVES: By using a stick of paraffine wax as a pencil, one can mark his plates to correspond with the numbers on the holders or in any other desired manner and thus help in their identification after development. Numbers or marks made in this way have the advantage that while sufficiently permanent for continued use, they can be easily rubbed off at any time if desired.—O. L. W., Minnesota.

PYRO STAINS ON FINGERS: I put two ounces of sodium sulphite in an eight-ounce bottle, add water to nearly fill up, and then put in a dram or two of sulphuric acid. When I start developing I put about half an ounce of this in a graduate, add four or five ounces of water, and keep it handy to dip my fingers in every time I take them out of the developer and expose them to the air. Pyro stains do not amount to much if they are not allowed to soak in and become dark by air oxidization. And if a little care is used, one need not do more than occasionally put the tips of his fingers into the developer or get the solution on the ends of his fingers in lifting the plate about.—D. F. G., New Hampshire.

REDUCING DENSITY LOCALLY: Grind up some cuttlefish bone in a mortar and sift it through a piece of bolting silk, such as the nearest miller will be glad to give you from an old reel. Do the same with some rosin and then mix the two in about equal proportions. The compound will be found very fine for rubbing down too dense parts of a negative. For larger spaces, use the tip of the finger with a circular motion, for smaller ones use a paper stump; and, as skill is acquired, very small areas can be dealt with by using the compound on the end of a pointed bit of wood.—A. S. D., Florida.

LEVELING THE CAMERA: It is known to only a portion of the craft that a one-way level is all that is required to bring a camera perfectly level upon the tripod. Set the tripod up the right way, that is, with one leg directly forward in the direction the lens is to point, and level roughly. Then turn the camera in a direction at right angles to the direction of the view, that is, give it a quarter turn, and bring it level by moving this forward leg a little to one side or the other. After this is done, swing the camera back to a position pointing at the view and again level by moving this same leg in or out on a line running in the same direction as the camera points. The camera will then be level in both directions. This, of course, applies in the case of a plumb indicator, as well as in that of a level.—H. J. K., Louisiana.

PRINTING HARD NEGATIVES: Some time ago I was given a batch of old pyro-stained negatives, made in the days of albumen paper, and consequently quite strong, even before age gave the dense stain, and was requested to make a set of prints therefrom. Doing the best I could with the softest obtainable gaslight paper failed to give good prints. A demonstrator came along and asked me why I did not use bromide paper, the regular enlarging kind. I did, and the results were most satisfactory. Although making contact prints, I had to do the work in my enlarging room to get the safer light that the room

afforded, and the paper was worked just as I would have used the gaslight kind. Since then I always make my contact prints from hard or stained negatives on bromide paper, and find it a great advantage, as well as a time-saver.—F. G. H., New Jersey.

PRINTING WHITE MARGINS: Assuming that we desire to print 4x5 negatives on 5x7 paper for album leaves, and get the white margins square and uniform, we proceed as follows: Cut a piece of cardboard to fit snugly in the 5x7 printing frame, and a little to one side of the center cut an opening that will just take the 4x5 negatives. Next take a piece of black paper, cut the same size as the cardboard and in the same position as the cut-out, cut an opening 3¾x4¾, so that it comes directly over the opening in the cardboard, and paste the two together at one end. This last permits of changing the negative without having to lift out the cardboard mask. Where it is desired to make the 3¾x4¾ print in the center of a sheet smaller than the 5x7 capacity of the frame, it is only necessary to cut a few narrow strips of white paper and paste them on the black mask to show where the corner of the printing paper comes when placing it down in the proper position. The same plan can, of course, be followed with other sizes of both negatives and printing frames.—O. L. W., Minnesota.

MAKING GROUNDGLASS: Some of my spare time during the dull season I employed in making up a supply of groundglasses that I later use in producing an occasional transparency as a gift for some one or the other of my customers. I first prepared my grinding bench as follows: I took a piece of heavy two-inch plank, one that would not slide around too easily, or warp if it got a little wet, and in the center enclosed a 5x7 space with a border made of thin strips of wood, strips a trifle thinner than the average plate. Then I took a piece of the same material, cut it 5x7 in size, carefully cemented a piece of sheet rubber to its face, gave it an edging of heavier wooden strips, put on so that it extended just a little beyond this rubber face, and added a convenient handle to the center of the back. This device, a supply of fine emery powder, a graduate containing water, and a convenient bench or table, are all that I need for the work. A negative glass, cleaned of the emulsion of course, is dropped into the recess in the center of the large board, a little of the emery powder dusted on, a sprinkling of water given, and then another like plate fitted into the other part which serves as a holder and permits it to be rubbed with a constantly changing motion over the other plate. The rubber facing of the holder should be dampened so as to hold the plate from dropping out too easily. If either plate fails to fit the opening snugly, the insertion of a match or other bit of wood at the side will make it tight. After rubbing about for a while, I rinse off the emery and observe the result secured; and, where an unground patch is observed on either plate, I tear a bit of fairly stout paper and place behind the glass at that spot, so as to force it forward where it will get the benefit of the grinding. One will be surprised at the number of sheets of groundglass he can turn out in a spare hour or so; and, after doing this for a few months, as leisure permits, a good stock of the glass will be accumulated. —D. F. G., New Hampshire.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

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Enlist That Lens

The Signal Corps is in urgent need of every obtainable Convertible Protar lens, Series 7a, in sizes from No. 11 to No. 19 inclusive, for immediate Government use overseas. This is urgent and we know it will have the immediate attention of every patriotic photographer or other owner of such lenses in this country. Full list price will be paid for all accepted, and there can be no excuse for delay in turning them in at once. This time send them to: Equipment Division, Signal Corps, Granite Building, Rochester, New York.

Do not delay a moment. Enlist your lens at once. A lens that is needed cannot be a "slacker" except as you, yourself, make it such. What a disgraceful thing it would be for the photographers of the country, the owners of these lenses, did the Government, in its need, find it necessary to requisition these lenses in order to secure what it so urgently needs. Records of importations and of American manufacturers makes it quite easy to determine upon a close approximation of the number of these lenses in this country, and it is felt that a wide publicity of this appeal should secure full enlistment of them. Give the appeal your attention; give it prompt action. The need fully justifies any sacrifice your compliance with the appeal may involve. If you have one of these lenses, send it at once. If you know where others are located, report them promptly. If you can reach photographers who may not see this appeal, advise them concerning it. Do not neglect this opportunity of helping. Do not invite the odium of having neglected to do so.

Get Out Into The Country

The camera user who is a city dweller,—and this is intended particularly for him, goes afield, it is quite true, but his trips are too often or entirely in the direction of some picnic ground, summer camping spot or other outing resort, if not to some wild section of the country where he hopes that "nature undefiled" may give his camera subjects that will result in pictures out of the ordinary. To him, the countryside is too commonplace; there are too many fences and telephone poles, farming districts are too often flat and uninteresting, making, in his eyes, the possibilities of landscape compositions almost negligible.

But let us forget our scenery and our landscape occasionally, and turn our attention to subjects of a different kind; even forgetting that our cameras require such things as "subjects" and "material" from which to evolve pictures. Let us get out in the country, out where the larder, and not the landscape, prevail; out where the succulents, and not the scenery, are the chief products; out where men and women are human beings, and not the creations of conventionality. Have you ever met these people; have you ever made their acquaintance;

have you ever studied their actions and their thoughts? Try it and good will result. You will not find them ignorant or uninformed; the automobile and the telephone have done away with all that,—if it ever existed to any extent. You may find them too busy or too honest to be polite, but never too superior or too self-satisfied to be so. You will find that they are not engaged in imitating one another, as are those among whom you dwell in the cities; you will find that there is a freshness and a freedom in their lives that contrasts sharply with your own constant repression of self into a preconceived propitiousness, something that has no value in their eyes.

You will find their world a real world, and a world well worth your thought and attention. You will find that in real life a woman loves without the accompanying chest heaving and panting that your stage and screen-sated sensibilities accept as the proper thing; that a man makes his love for a woman known to her without "crushing her to him until their lips meet", and that when she refuses him, it is not "with distended nostrils, her eyes shooting lava terrors" in the direction of the rejected swain, as your fiction-fed fancies assume. And you will find that the cows, pasteurized on contented meadows, do not give condensed milk; as you had supposed. You will get a new conception of life, you will learn many new things, you will profit in excess of any possible good fortune in the way of landscapes or "views"; you will find the real world, the open spaces, and the fresh air, and it will do you good.

And there are pictures to be recorded on the sensitive emulsion of the plate or film, as well as on the mind. You will first learn to love these people, to value their world, to understand their lives, to appreciate the wholesomeness of their surroundings, and then the making of pictures becomes easy. Poor indeed is the artist who cannot put his best work into portraying that which he loves. And pictures such as are afforded are real pictures, pictures that have a charm above that of our landscapes and the like, pictures that tell their story to us all, pictures that are as real as those of the poster, the stage, the movie screen and the fiction magazines are unreal. Get out in the country with your camera and you will find it well worth your while.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D.

A Convenient Accurate Photometer for the Measurement of Photographic Densities

A notable contribution to the methods of photographic investigation was recently made in a paper and demonstration before the Royal Photographic Society by Messrs. W. B. Ferguson, F. F. Renwick and D. E. Benson, describing a new form of photometer for the measurement of densities which owes its qualities to the joint labors of these three experimenters. The general features and accuracy in use of the Ferguson-Renwick-Benson photometer, which may be shortly designated as the "F. R. B.", are set forth in the following abridgment of notes contributed to the *Journal of the Royal Photographic Society* by its three joint originators:

"What are the main requirements in a photometer designed for the purpose of measuring negative densities? They are set out in the title of this communication. The first is accuracy, and the second convenience. With regard to accuracy, there are several different ways in which variations in light-intensity may be measured. I do not, however, propose to discuss their relative merits in this paper, but will content myself with pointing out that a photometer based upon the law of inverse squares is about the only form which can be constructed easily by anyone who is handy with tools. Such an instrument depends simply upon accurate measurements of distance between light-source and illuminated object; therefore, the only points upon which it is necessary to concentrate attention are the desirability of using a light-source which is as nearly as possible a point light-source, or, at any rate, the position of the mass-center of the light must be accurately known, and, accuracy in the measurements of its distance and, in addition, sensitiveness of the comparison surface. All photometric work is done by equalizing the brightness of two contiguous illuminated fields, and it is desirable, therefore, that the form of comparison surface, which is employed shall be as sensitive as possible. The only other thing is the question of the actual reading of the scale, and it is not difficult by making the scale sufficiently long to ensure that the reading of the scale itself is at least as accurate as the actual adjustment. In adopting the law of inverse squares we have gone to the simplest type of instrument we could. The length of our instrument is such that the divisions are not inconveniently crowded, even at the most constricted part of the scale, and we decided in this instrument to adopt the familiar Lummer-Brodhun optical cube, which furnishes a very sensitive form of comparator.

"Assuming, therefore, that this instrument can be made very accurately, we may pass to the question of convenience. One point of importance in designing a photometer is that the source of light to be used should be one which is available to the majority of workers. The simplest solution is electricity, provided it can be made available for everybody. In this instrument we have endeavored to make it so, for not only can it be run off the supply mains, but also from accumulators without any difficulty, and if accumulators are not available, primary batteries can be used. It is obvious, I think, that any photometer which employs more than one light source is neither convenient nor reliable for the best work. Here we are employing but one small lamp, of the ordinary motor-car headlight size, but made with a compact flat grid-iron filament and of about fifteen candlepower.

"We come next to the range of the instrument. This question of range is in most photometers a somewhat serious one. It is very important that the range of the instrument should be not less than two with good luminosity of field. We have arranged our instrument so that one length of the scale gives us 1.8, and by the use of a sup-

plementary density that range can be increased straight away up to 2.8 or more. For by far the greater proportion of ordinary photographic measurements a range of 2.5 to 2.8 is sufficient to cover all requirements. For the purpose of X-ray density measurements, however, that range will have to be increased, and I shall mention later on how it can be done with our form of photometer. There is no difficulty about getting sufficient luminosity up to 2.3 or 2.4, and in any reasonably dark room one can work up to 2.6 or 2.8 with the instrument as it is.

"The next point relating to convenience is that one does not want always to measure small narrow strips of plate. It is a great convenience to be able to take a negative and to measure the density of any part of that plate without cutting it up. A good many photometers have been devised in which it is essential that the piece of the plate to be measured should not be more than one-half inch wide. This leads to the exposure and development of very narrow strips of plate, which is very liable to introduce complications in the shape of irregular development. A good photometer from this standpoint should be able to take, at any rate, a quarter-plate entire. Our instrument does that quite comfortably, and, in fact, a half-plate can be measured at almost all parts without any necessity for cutting it.

"There are one or two practical points to be considered in using any photometer: if you are going to obtain accurate results, it is necessary to go about the work from the beginning in a particular way. For instance, before you begin any experiments in the actual measurement of densities you must first be careful to fix the position of your zero. You may then find a certain index error, and it is advisable to make four or five, or even more, measurements when starting in order to find out exactly what that index error is. The scale is marked beyond the zero to the right-hand side, so that there may be an actual negative reading, and it may happen that the true zero of the instrument is not at the 0 point, as in the instrument for measuring reflection densities, where the zero point of the lamp in use is 0.03 negative, and therefore that has to be taken into account.

"Another point to remember is that during the series of measurements one should, if possible, have no alteration in the current supply of the lamp, as any considerable change may affect the accuracy of a series of measurements. It is best to be sure of a regular supply, and if one happens to be working at the time when the main current supply is being changed, it may in some cases lead to some small error owing to the fluctuation. If one is working from accumulators, of course, one is quite safe. In my own instrument I have to work from alternating current, and I have found after many experiences that the best thing to do is to put in a choking coil, for then by altering the position of the iron core one can regulate the current to such an extent as to get the precise amount of light which is most easy to work with. I have tried resistances instead of the choking coil, but with the alternating current the choking coil is the better method of current regulation.

"In working with this instrument the reading taken by moving the mirror from one's right to one's left is generally different from that obtained by moving the mirror from left to right. I have found it best, therefore, to take a series of readings, first working from the left to the right, and then from the right to the left, and if four, five or six readings are taken, and their mean calculated, one has got what is probably an extremely exact reading. When you have worked it out, set your index to the figure found, and after resting the eyes, judge the comparison surface, and if you find it perfectly even, you may be absolutely certain that you have got an exact reading. I will illustrate this by an actual case of an uneven series of readings which will show the advantage of the method. The successive readings were as follows: L—R signifying working from left to right, and R—L from right to left:

$$\left.\begin{array}{l} \text{L—R } 1.023 \\ \text{R—L } 1.023 \\ \text{L—R } 1.028 \\ \text{R—L } 1.018 \\ \text{L—R } 1.036 \\ \text{R—L } 1.016 \\ \hline 6.144 \end{array}\right\} \frac{6.144}{6} = 1.024$$

Between some of these readings there may appear to be considerable variation, but if the mean of them be taken it will be found to be about 1.024, and when I had got that

particular reading I set the index at it, rested my eyes for a little time; it is best not to shut them, but to look at something very faintly illuminated, and then made an examination and found the comparison screen uniform. Of course, when one has got this figure it still remains to subtract the zero error.

"There is still another question: how far can one rely upon the readings of this instrument? I have made a considerable series of measurements with the instrument demonstrated this evening and from them have calculated by Ostwald's method that the mean error of the instrument was 0.002. It means that one is accurate to about four parts in 1000 with any density, which is about one. Further experiments have convinced me that we can work within these limits when we are used to the instrument. It is probably known to you that, except by the merest accident, no two watches at any given moment register identical readings, probably the watch of each person in this room would give a different reading, and this is equally true of density measurements by different photometers.

Metal For Developing Tanks

The suggestion recently of a correspondent that a substance like vulcanite is necessary for the making of developing tanks is one which we cannot endorse. Vulcanite is really a very unreliable material, liable to break, to bend and to warp. An ideal material for any developing appliance is the metal known as platinoid, which is said to be German silver with a little tungsten added, or it may be described in greater detail as an alloy of copper, zinc, nickel and tungsten. Though rather dearer than brass, it is not a very expensive material, or was not before the war, while it has some most valuable properties, chief among these being great stiffness and rigidity, even in moderately thin sheet form, though easy to cut and work, and complete immunity from the action of developers. It should make perfect racks, and would also make perfect tanks, though the latter might be comparatively expensive. A good tank that will last forever is, however, worth paying for, and our experience of platinoid suggests that nothing better could well be used for both rack and tank. It requires no plating, therefore it cannot be damaged by friction or wear, as a nickel coating can be, and frequently is. It is quite rustless, and therefore another source of trouble to tank users is obviated. At present it is probably unobtainable, but it is distinctly a material to be remembered when better times come.—*British Journal of Photography.*

Photography In Astronomy

To most people the mention of an astronomer brings up the picture of an elderly man gazing steadfastly for long hours through his telescope at the sky. A fine night in an observatory will certainly find the observer with his eye fixed to the eyepiece of his telescope; but it is highly improbable that on a fine night the astronomer will be using the telescope for visual examination. Instead we shall find the astronomer looking through the "finder": that is to say, the auxiliary telescope attached to the main instrument, and used for keeping the great tube pointed at the desired part of the heavens, and for compensating the errors of the driving clock which is designed to keep the telescope pointed at the same star in spite of the rotation of the earth.

If a perfect clock could be made, the astronomer would not need to watch the stars at all. Nowadays observing is done by means of a photographic plate on which the telescope forms its image; and the only use of the observer is to point the telescope at the requisite part of the sky, and to hold it there, compensating for the small errors which are unavoidable in the mechanism of any clock.

The real work of observation commences after the plates have been developed and dried. The negatives are examined and compared with plates taken at different times. The most important use of the photographic plate in astronomy is in the production and preservation of records of the present positions of the stars for examination in the future.

One of the most ambitious programs of work that has ever been arranged was the production of the great astrographic chart, or map of all the stars in the sky, on which the observatories of all nations have been engaged for many years. The purpose of this chart is to provide an accurate atlas of the stars as they are at the present time, so that in ages to come their movements can be studied.

The stars appear to move very slowly, but

in reality move with great velocity. Many stars are traveling five hundred million miles a year; such a distance is five times as far as from the earth to the sun. The distance of the stars themselves is inconceivably great.

In order to measure the distance of the stars, the astronomer has had to invent a special unit. Since the mile is far too small to get any idea of such a distance, the unit taken is the distance which light can travel in a year. Light travels about 186,000 miles in a second: so that in a year a ray of light can travel six thousand billion miles. This vast distance, which is called a "light-year," therefore, is the unit employed in measuring the distance of the stars.

The nearest stars are about eight light-years away: so that we see these stars, not as they are today, but as they were in 1910. These are the nearest stars: for we know that we are seeing many stars by light which left them a century or more ago; while the light which is reaching us now from the furthest stars of the distance of which we can form any good idea, started before Columbus discovered America. Many stars are at such distances that we are quite unable to form any accurate idea of them.

With objects at such an enormous distance, even the most tremendous changes take much time to become visible. Eight years ago a new star appeared in the heavens; that is to say, its light reached us eight years ago. The star itself may have been formed long before, perhaps by the collision of two large stars: but eight years ago we first saw its light, which had been traveling to us since the formation of the star. That star was in an area of the sky which apparently contains some material, either gas or small particles like those which we see as shooting stars, since there is a little light visible around the new star, and in the last eight years this light has been spreading. Astronomers think that what we see is the light spreading from the new star through space, and lighting up the small particles of matter, which reflect it to us just as the moon reflects the sunlight.

With such vast distances and long periods, mortal man must feel that life is not long enough to study the changes which go on in the stellar universe: but by means of photography he can store up his observations of today for the study of future generations of men. So that the discoveries of the future are dependent on the star negatives made by the photographic astronomer at the present day.

The negatives are made with the greatest care; the photographic materials which are used are specially selected and studied, and as great attention is paid to the photographic observations as to the design and construction of the telescope itself. In order to improve the photographic materials used in astronomy, the Eastman Kodak Co., through its Research Laboratory, is collaborating with many observatories. In this laboratory a skilled astronomer with many years' experience in photographic observation is investigating the properties of different kinds of photographic materials, with a view to suggesting means by which improved materials can be made available for the use of the astronomer. It is not too much to say that astronomers regard such research on photographic materials as of equal importance with their own work on astronomical methods and apparatus.—Dr. C. E. Kenneth Mees in *Australasian Photo-Review.*

Pinhole Power

A writer of an article on pinhole photography in a contemporary recommends for the calculation of exposure "what is known as the Watkins power system". It may be so known to him, but most people recognize in the hyphenated designated Watkins-Power the share in its origination of that enthusiastic amateur photographer Dr. D'Arcy Power, to whom photography is indebted for many contributions to practical photographic processes. Accession to power is commonly regarded as a distinction. The writer on pinhole photography has perverted it into the reverse. We can imagine, however, that our friends of San Francisco and Hereford, who are thus joined in the naive error of our contemporary's contributor, will smile to themselves, and will, perhaps, call to their recollection a similar instance of the danger of a little knowledge which provided the occasion for a laugh a few years ago. That was when the late Hector Maclean, mis-hearing a reference to the Purkinje effect at an R. P. S. lecture, subsequently delighted certain technicians by some solemn remarks in print on "the well known Perkins phenomenon".

The Dufay Versicolor Screen-Plate Color Film

What appears to be a notable development of the screen-plate system of color photography is described in the following article. It is the invention of M. L. Dufay who, it will be remembered, was one of the early producers of a color screen-plate, the Dioptichrome. We give herewith a slightly abridged description of the process from a translation of the original French paper, which recently appeared in the *Scientific American Supplement.*

Continuing his researches for the past ten years, M. Dufay has invented a process of manufacturing colored screens on flexible films. The process of manufacture is as follows: A thin sheet of transparent celluloid is passed between two rollers, raised to a suitable temperature. If one of these rollers is engraved with extremely fine parallel lines or grooves, the sheet of celluloid, softened by the heat of the rollers, will take automatically and exactly the imprint of the lines engraved upon the roller. It will embrace the slightest details, no matter how great the degree of fineness. The sheet of celluloid thus transformed is covered, on the grooved side, with a greasy red, perfectly transparent substance by means of the distributing rollers of a suitable machine. The side thus inked is immediately thereafter properly wiped, as in the case of an engraved copper plate. This wiping will eliminate the excess of grease, leaving bare all the reliefs, but will not remove the grease which has entered the grooves; the surface treated will then present the raised portions left bare and the grooves, rendered impermeable, colored red by the grease, and brought up to the general level by the latter.

If we now pour over the celluloid sheet thus treated an alcoholic solution colored blue, for example, this blue tincture will be unable to penetrate and color the celluloid except at the base portions which remain bare and have not been made impermeable.

After this operation the surface of the celluloid will present a series of parallel lines automatically and exactly juxtaposed and colored alternately by the red fatty substance and the blue tincture.

If the same series of operations is repeated later on simultaneously on the other side of the celluloid, supposing the sheet to be thin enough to avoid any damaging ulterior effect of parallax, and if the two colors juxtaposed on this side are, for example, yellow and violet, then by means of superposition and optical fusion we shall have a correct quartet of colors. M. Dufay has applied the following rule to constitute screens of four colors optically correct, capable of a perfect rendering of colors:

Upon a first group of transparent primary colors, exactly juxtaposed side by side under the form of lines, dots, or any microscopic figures whatever, it is necessary, and sufficient, to superpose, in practically intimate contact, a second group of two other transparent colors, namely: the third primary color, that is the one not entering into the composition of the first group, beside which its exact complementary is juxtaposed.

Thus we obtain three combinations of screens.

A: First group composed of yellow and blue juxtaposed, upon which is superposed a second group of red and green.

B: First group composed of yellow and red juxtaposed, upon which is superposed a second group of blue and orange.

C: First group composed of red and blue juxtaposed, upon which is superposed a second group of yellow and violet.

These three different quartets constitute equally perfect chromatic filters, and we perceive that such a process leads to important industrial simplifications, since it suppresses the very great difficulty of the juxtapositon of three colored elements side by side. It also permits us to vary infinitely the form and the arrangement of the colored microscopic elements, etc.

This new process, which is based on the moulding of celluloid, enables us to obtain automatically screens of any degree of fineness whatever. Thus, in practice, screens have been obtained comprising as high as nine hundred perfectly transparent geometric colored elements juxtaposed alternately with mathematical accuracy in a square millimeter.

Upon a film prepared as above, and rendered capable of selecting and recording all the colors of the spectrum, is spread a layer of negative emulsion, extra rapid and properly panchromatized.

The taking of the view, the development, and the fixing are done in the ordinary man-

ner; but the negative, after being developed and fixed, exhibits the remarkable peculiarity of reproducing all the complementary or negative colors of the subject photographed; it will be an anti-chromatic negative, which can be utilized for multiplication and printing by contact an indefinite number of reproductions of the image in colors.

If, in fact, we print this anti-chromatic negative film, by contact, in an ordinary printing frame, on a film which itself also bears a selective screen created by the above process, but covered with a positive emulsion, making use, for the printing, of either ordinary daylight or of artificial light, a new selection will automatically occur during the impression; the negative or complementary colors of the negative will be printed on the positive film, yielding this time an image in the real colors of the subject photographed.

The Photography of Contrasts

Some discussion arose on the same occasion as to methods of correction during development when too much density was being obtained at one end of the scale and too little at the other. The method of Mr. Luboshez was to interrupt the development and put the plate into water at the same temperature as the developer. This plan was more effective than that of either doubling the amount of pyro or the amount of soda in the case of over- or under-exposure. Another plan, mentioned by Mr. Ferguson in the discussion as having been first given by Sir William Abney, was to take such a negative out of the developer directly the image began to appear, and, without washing, to leave it alone for some time in a dish, by which procedure the higher densities would be to some extent "starved". In either of these ways the ratio of densities could be modified, and the difficulty of photographing contrasts to some extent overcome.—*Amateur Photographer.*

Permanganate Hypo Eliminator

Those who like to have a definite formula may note the prescription in a recent issue of the *Journal of the Photographic Society of India* for the bath of permanganate for the chemical destruction of hypo. Captain P. J. Kerr, who uses it for roll film, dissolves twenty grains of potassium permanganate in one gallon of water. About eight ounces of this solution are used for a spool of film, which is moved in the bath until the latter turns brown. A fresh lot of bath is then at once used and the process continued through, so Captain Kerr says, ten changes. It is mentioned that the last two or three baths should be diluted to a pale pink, which, as soon as the film is free from hypo, will not change color. Also it is advised that the film should be rinsed in clean water after every four changes. Used according to this plan, it is found that the method is free from any liability to stain the film. It may be thought by some that a succession of ten changes of water, used in the same way, would serve to wash a film from hypo. Probably it would, but not with the same speed as a succession of permanganate baths. On the ground of its rapidity, an item of importance in a hot country like India, it is, no doubt, superior to any method of washing in plain water.

Knife Work On Bromides

Not so long ago the retoucher who could use the knife effectively upon a negative was the exception, but now every practitioner of any pretensions is presumed to be an expert in this direction. The print finisher has not adopted the knife to the same extent, yet it is easier to work upon a matt-surface bromide than it is upon a negative. The procedure is very similar in each case. The gelatine film must be absolutely dry, so that the portion of the image to be removed comes away in powder; the knife must have a razor-like edge, which must be kept at right angles to the paper, and the scraping must be done very gently, so as to avoid chipping off the coating. A knife skilfully used is to be preferred to any method of using abrasive powder or erasing rubber, as is often recommended, as the work can be kept closer to the outlines of the subject and the surface is less disturbed. We have seen a skilful finisher, by this method, work up a dark enlargement using an ordinary penknife, clearing up heavy shadows and introducing lights in a way which appeared marvelous to the uninitiated. A great advantage over touching with body color is that, as nothing is added to the original image, there is no change of color, even if the print fades slightly. It should be remembered that scraping is the most effective way of lightening aerographed work which cannot be cleanly removed with water.—*British Journal of Photography.*

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Developing Under-Exposures

Some months ago one of our correspondents in Mexico asked for a developer suitable for hot weather conditions with no ice available. We asked our stenographer to copy off the instructions given in this department in our July, 1904, issue, under the heading "Developing in Hot Weather", and this was sent as a reply. Last week we had a letter from this same correspondent, since returned to this country, asking if we appreciated the fact that this excellent formula, used with the preliminary bath of formalin solution to permit of a high temperature of the developer, was just the thing for developing under-exposed films or plates. Today *The Amateur Photographer* comes to hand with a writer therein saying: "A friend of mine recently from the East African front tells me of a developer he has been using for hand-camera snapshots taken under tropical conditions". And then follows the formula and instructions as to the use of the formalin bath as given in our pages so long ago. This is no discredit to our English contemporary, the author of the article or to the East African friend. The formula did not originate with us, and was no doubt used long before our publication of it. We mention the matter simply to confirm the judgment of our Mexican correspondent, and as our excuse for reprinting from our own pages of over fourteen years ago, as follows:

"As I advised a correspondent last summer, amidol should be selected as a developer, because of its not requiring the assistance of an alkali to become operative. A good formula for such a hot-weather developer is as follows: To fifty ounces of water add two ounces of the best recrystallized sulphite of soda and twenty grains each of bromide of potassium and citric acid. When ready to develop, add two and one-half grains of dry amidol to each ounce of the above. If further precautions are necessary to prevent softening of the film, place the plate in a bath composed of one part of formalin in fifty parts of water, for a few moments. Formalin added to the fixing bath will also assist. The following formula is suggested: Regular hypo solution, one-in-four, one gallon; metabisulphite of potassium, one ounce; formalin, one ounce. Working in this manner and with the formula given above, the use of ice can be dispensed with in the most sultry weather. Even where no damage to the film is expected, it is well to employ a little formalin in the fixing bath or to use a bath after fixing in order that the negative may be blotted off and dried rapidly so that circular depressions sometimes resulting from slow drying in a warm, damp atmosphere may be avoided."

Pictures and Records

Entirely too many of our critics, both those of the spoken word and of the printed page, delight in condemning a print as "only a record". Some of them temper their criticism by saying: "Without pictorial merit, but good as a record". But even this last is hardly fair; a "record", as such, has a value, and, in its place it may have greater value than a print, possessing more or less pictorial merit. One of my friends who has owned and used a camera for a number of years, still finds pleasure therein without the least interest in or desire to produce what is called pictorial work, simply because he is of a thoroughly practical and mechanical turn of mind and fully realizes the fact. Perhaps it would be better if a few of his kind would turn the same deaf ear to this too universal disparagement of the "record" and realize the same thing. This friend has a collection of prints that it is a pleasure to look through, and that is something that cannot be said concerning the work of the average amateur with

the same length of photographic apprenticeship to his credit. My friend's "records" are interesting, they are well taken, they are just what they are intended to be, and they will grow in value as the years roll around. Talking the matter over with him, I find that he has but a few very simple "don'ts" that he keeps in mind. One is that his subjects do not appear any more conscious of the camera than is absolutely necessary; another is that the picture does not give the beholder a desire to see more than is shown, and still another is that there be no possible reason for asking why the picture was taken. The result is that while his work is not what can be called pictorial, it really does not, in a good many cases, fail of being fairly artistic. That is, few, if any, of his pictures are so arranged that an artist could find any particular fault with them further than to say that they were mainly of personal interest and without real pictorial value on that account. His collection of prints is a record of his experiences, of his friends, of his life as he is living it; a record that is all the more enjoyable by reason of its truthfulness and its visible form. As such it has a value far in excess of that possessed by the prints accumulated by the average worker who is striving for the pictorial, the artistic. Can't we have some critic come out and say occasionally: "This print is of no value as a record, but it has some slight pictorial value." That would put a different aspect upon the matter, and instead of causing the novice to think that a print had no reason for being if it was not pictorial, he would understand that a well-made "record" might have a place in the scheme of things; might be well worth the capabilities of both his camera and himself.

Long-Focus Portraits

We hear a good deal about soft-focus portraiture, but let us consider a long-focus lens for portrait work; at least, let us see what special advantages the long-focus lens might have. Not long ago, one of my visitors pulled out the usual packet of prints, this time full length and seated figures, that were excellent examples of out-door or garden portraiture. Aside from their charm of lighting and atmosphere, the remarkable thing was that the hands, feet and limbs all looked quite natural as to size, despite the reckless manner in which they had been posed, seemingly without regard to the usual tendency of the lens to distort them if not kept on the same plane as the body. And the funny thing about it was that the photographer, an amateur who had concerned himself with only this one line of work, had never realized what an advantage he was enjoying until one of his sitters went to a regular studio and insisted on having one of his poses duplicated. The result disclosed some submarine feet and Zeppelin knees that made the picture only a caricature.

Our visitor's method of working came about in this way: His dining room veranda, on the ground level, looks into a rather pretty garden that is intersected by a brick walk. A little thought and care in the arrangement of the planting last spring, gave him a very charming setting for portraits at several points along this walk. But the trouble came in when he tried to move his camera stand around on the rough brick surface. So he bethought himself of a lens having sufficient focal length to permit of the camera remaining within the floored veranda where moving the camera about was easier. He found a rapid rectilinear of about thirty inches focal length, at a dealers, offered at a bargain; and bought it after a trial. And I wish I could show some of the portraits made with it. It would never do to use in a studio because it would require about fifty feet, but for good drawing and freedom from restrictions as to the placing of the sitter's limbs, it is simply a wonderful tool. Perhaps a few other workers are situated so that they can duplicate this favorable condition. And do not imagine that you can do any better than one of these old rapid rectilinears. Even if you do get an anastigmat of that focal length; or rather, if they were obtainable, they would be of no advantage, because their large apertures would not be available. One would not, with a lens of that size, get any workable depth of focus with anything larger than f-8, the working aperture of the usual rapid rectilinear. But the camera must have more than the usual extension and a sufficiently large and rigid front to accommodate such a large lens; the one in question being about four inches in diameter.

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NEW MEMBERS

4511—Grover Mizer, R. F. D. No. 1, Stone Creek, Ohio.
3¼x5½ and 5x7, developing papers, of groups and scenery; for landscape views and general subjects. Post cards only. Class 1.

4512—Paul Fischer, Box 66, Bulger, Pa.
Class 2.

4513—L. J. Schanz, 232 E. Ohio St., Chicago, Ill.
Artistic or decorative photographs; for the same. Class 1.

4514—W. D. Roberts, P. O. Box 713, Nogales, Ariz.
Class 2.

4515—Andrew Onniston, Firestone, Colo.
2¼x3¼, 2¼x4¼ and 2⅞x4⅞, various papers, of mountains, scenery, horses, Indians, cowboys and miscellaneous views; for mountain scenery, Indians and cowboys. Class 1.

4516—John R. Rowell, auditor Belmont Wagner Mining Co., Telluride, Colo.
3¼x5½, various papers, of mostly mountain scenery; for mountain scenes and proper nudes—all for coloring work. If, at any time, I am unable to make an exchange, will pay for prints at say cost plus 20 per cent. Class 1.

4517—Russell Nakata, 1714 14th Ave., Altoona, Pa.
2¼x3¼, 3¼x5½, 4x6, and 5x7, various papers, of landscapes, water scenes and portrait studies; for landscape, marine and portrait studies. Class 1.

4518—Herbert R. H. Gee, Ephrata, Wash.
Class 2.

RENEWALS

4236—William Rocamp, Ashville, Manitoba, Canada.
3¼x5½, various papers, of Manitoba scenes and farm subjects; for seaside bathing scenes and children. Class 1.

4400—L. K. Miller, Jones, Mich.
Post cards of scenery; for the same. Class 1.

4412—Henry J. Rust, Box 683, Coeur d'Alene, Idaho.
4x5 and 5x7, various papers, of birds and nests, wild flowers, wild animals and insects; for the same. First class work only. Also lantern slides of the same subjects, black and toned, all colors. Class 1.

4419—C. Lilie, Persia, Iowa.
Class 2.

CHANGES OF ADDRESS

654—H. E. High, 527 12th St., Denver, Colo.
(Was Ellsworth, Kans.)

2645—Hugo H. Schroder, Box 421, Fort Pierce, Fla.
(Was Bettendorf, Iowa.)

4163—C. A. Heald, 330 San Bernardino Road, Covina, Cal.
(Was San Dimas, Cal.)

4312—J. Leo Hafen, Springville, Utah.
(Was Farmington, Utah.)

4383—John W. O'Neill, 3817 Randolph Ave., Oakland, Cal.
(Was 3123 13th Ave.)

4457—Glenn L. Gebhardt, Carbondale, Colo.
(Was Canon City, Colo.)

WITHDRAWAL

4409—R. L. Clahar, 126 West 143rd St., New York, N. Y.
For the duration of the war.

CLUB NEWS AND NOTES

Club Secretaries and others will oblige by sending us reports for this Department

Southern California Camera Club

The Southern California Camera Club of Los Angeles, has recently moved to the fifth floor of the Wilcox Building, Second and Spring Streets, where it now enjoys more comfortable quarters. A number of first-class dark-rooms have been installed, as also an excellent enlarging outfit equipped with an arc light. With good elevator and janitor service, and adequate heating facilities for winter, the convenience of the members is much better served. The club affords a fine opportunity for the ladies who have seen their men folks leave for the war, of occupying their spare time with one of the most fascinating branches of art. Help and instruction is always available to beginners desiring to learn the rudiments of the photographic operations; and, at the same time the most advanced workers are encouraged to vie with their equals in producing works of art.

In order to extend and widen the influence of the club, the regular monthly competitions have been thrown open to non-members. Prints should be delivered at the club rooms on the last Thursday evening of the month. These are exhibited for a month; and, three prize ribbons are awarded unless there be less than six entrants. The subjects for competition are: August, figure studies; September, outing pictures; October, outdoor portraits; November, miscellaneous; December, flower studies; January, portraits; February, landscapes; March, still life; April, marines; May, cloud studies; June, child studies, and July, street scenes. The third Thursday evening of each month is given over to an autochrome and lantern slide entertainment and the other weekly meetings are devoted to business, demonstrations, art lectures or studies, criticisms and similar profitable pursuits.

OUR BOOK SHELVES

"Techno-Chemical Receipt Book"

This handsome volume contains several thousand receipts, covering a very wide field of work in the arts and industries, furnishing receipts ranging from those suitable for home and small shop use, to those suitable for the more technical requirements of the large manufacturer. Perhaps some idea of the scope of the work can be obtained from a few of the general headings from the center of the list, as follows: Fire Extinguishing Agents, Means of Making Tissue, Wood, etc., Incombustibles; Fireworks; Food and Food Preparations, Freezing Mixtures, Fruit and Other Syrups, Fuel and Heating, Heat Insulation, Fusible Colors Used in Porcelain Painting, Glass, Composition of the Various Kinds, and so on through a long list. The work is a standard one; the latest edition has been brought right up to the present advance of chemical technology by one of the original editors, William H. Wahl, Ph. D., Secretary of the Franklin Institute, Philadelphia. Published by Henry Carey Baird & Company, 810 Walnut Street, Philadelphia, Pennsylvania. Price two dollars, postpaid.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

Harry B. Wills, chief plate demonstrator for the Eastman Kodak Company, spent the two first weeks of September in San Francisco. He wears the same old smile as heretofore.

Messrs. Freeman and Stowe, both formerly of Eureka, are making panorams at Camp Fremont.

Mr. Sneider of the Logan studio, Stockton, is sending two sons to the army. He looks young enough to go himself.

"Mose" Grady of the Hartsook studio, Fresno, toured the San Joaquin Valley with "your truly" recently. (We did it in a day.)

Anna Grady has returned to Fresno after six pleasant weeks in Seattle.

M. G. Plumlee of Hirsch & Kaye's is in France with his Uncle Sam.

Many faces are missing along the line, but he hopes to see them all back soon.

Uncle "Bunk" Richardson did not have to register, but that doesn't keep him from taking orders. People still shoot with Premo and Graflex cameras.

Arthur Muhl, assistant manager of the local Eastman Branch, is back on the job again.

O. J. Smith reports portrait films going big, and says: "Better get in line".

L. M. Powell, Hanford's leading photographer, has put on another able assistant.

Ben Hassegawa, formerly of the Etter studio, San Francisco, now has a very fine place of his own in Stockton.

Both Thullen and Robinson of Merced are kept busy these days. Plenty of work and no fighting for it.

Harry Jones, formerly with his uncle at the Jones Photo Supply Company's, San Bernardino, has taken charge of the photo department of the Bowman Drug Company, Fresno.

Why don't other and larger city photographers follow the example of the little City of Fresno? There the portrait photographers have formed a local association, getting together once a month. "Mose" Grady of Hartsook's is the father of the movement.

Frank Kamigami, West Fresno's photographer, is very busy these days.

H. C. Jenson of Selma has a fine assistant in his ten-year-old daughter.

Carl LaMoigne is now located in Dinuba. Has a drug store of his own and is doing a wonderful business. Good luck, Carl.

H. E. Lutes, San Diego, says Camp Kearny is in just the right spot. His business has doubled.

J. C. Franklin of Palo Alto is opening a studio in Camp Fremont.

T. C. Wohlbruck of Reno expects to pass through France on his way to Berlin, very shortly.

The Fumes of Chemicals

The following, from one of our readers, brings out a point that we do not recall having seen touched upon before, yet a point worthy of consideration. He writes:

On page 332 of the August number is an answer to a query re the injuriousness of the fumes of photographic chemicals; and while, of course, nothing could be added to its completeness, it calls to mind a little occurrence that came under my observation, one which might be of passing interest, if not of actual benefit, to some of my fellow readers. Let me say, however, that I am not in any way connected with any branch of photography as a business, so that this is not intended as other than as possibly helpful suggestion.

Somewhere I have read that "Water is the cheapest chemical entering into the production of photographs." I doubt it, and the following recent experience will explain why:

While in the office of the chief chemist at my place of employment, there came in to see him one morning, the manager of a firm that manufactured developing-out or "gaslight" paper for the trade. As his call

was for advice for which he did not expect to pay, nor did he, I was allowed to remain while he explained his troubles. He laid out before us some twenty-five or thirty contact prints, all portraits, about 11x 14; as pretty a bunch of prints as I have ever seen in one lot (though I have not been around much). "Now these", said he, "are on Artura; and these others are on paper which we make in our laboratory, which, as you can see, are softer than the Artura ones. But these in this third lot are on paper made in quantity in our workroom, and it prints much harder than either of the other two. We use the same formula and we have tried many times, always with the same results; we get a harder paper in our workroom than we do in our laboratory, using absolutely the same formula, only, of course, in quite larger quantity. Now, why?"

Remembering some of my own semi-scientific experiments with gaslight paper, I wanted to suggest that possibly, in flowing the emulsion, his employees inadvertently coated the wrong side of the paper, but I realized that I was only filling a "listening post", and held my peace. After a few moments deliberation the chemist advised that he was not very familiar with the manufacture of gaslight paper and that he did not wish to inquire into his formula; but a formula was a formula, whether he mixed an ounce in the laboratory or a ton in the workroom. But, "How is the ventilation in your workroom?" Our visitor confessed that it was not very good. "Well, there are some chemicals that give off a gas that is invisible, or odorless; sometimes both. One of this nature may enter into your formula, so that if you mix a small amount in your laboratory it would have no noticeable effect on the results, but if you kept a barrel of it in your workroom, especially with its poor ventilation, and probably the chemical exposed to the atmosphere of the room most of the time by reason of the barrel being uncovered, the "gas" from it might affect your paper considerably. Look after the ventilation of your workroom and place your stock of heavy chemicals outside of it, if necessary; then, if that does not overcome the difficulty, come and see us again."

Whether the trouble was eliminated or not, I do not know; but our visitor did not return. And so it is my opinion that the cheapest chemical used, from first to last, is fresh air (we have to pay for water here, so much for each thousand feet). And the moral is, if any, as we say in Ohio: "Ventilate, Pardner, ventilate."

Some Lens Bargains

The New York Camera Exchange recently purchased a number of good Carl Zeiss lenses that they are offering at what can be considered bargain prices. Any of our readers desirous of securing a Carl Zeiss lens IIB series should write this firm, the address being 109 Fulton Street, New York.

An Informative List

There has just reached our desk a very informative folder entitled: "Description and Price List of Photographic Papers Manufactured by the Eastman Kodak Company." In addition to a table that shows at a glance the sizes and prices, together with the sizes and packages, of all the various kinds and grades of the several papers, together with a list detailing and specifying the quality of each kind. The list is one that should be very helpful to users of any of these papers, and it should certainly help one greatly in ordering just the right paper for any particular class of work. It has been compiled and published by the well known local dealer, Henry G. de Roos, 88 Third Street, San Francisco, California.

Illinois College of Photography

A letter from A. Penrod, former instructor at the College, and also at an Eastern naval school, states that he is now an instructor in the Government Photographic School, a department of Columbia University. We are pleased to hear of Mr. Penrod's continued success.

Mr. Latshaw, formerly an instructor in the College, and who recently paid Effingham a brief visit, is now entering the Service, leaving his successful studio in the care of others.

Mark Baughman, class of 1918, now stationed at Camp Sherman, Chillicothe, Ohio, is expecting to enter the signal corps.

President Bissell has just received word that his nephew, Paul F. Bissell of Maryland, has arrived safely in France.

XXV No. 11 NOVEMBER, 1918 Price, 10 Cent

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CAMERA CRAFT

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CALIFORNIA

Cyko Conserves Labor

"THE RESULTS of our recent trial of CYKO Paper," writes Mr. H. A. Reedy, of the Artcraft Photo Company, of St. Paul, Minn., "proved that our printers *could make a third more prints in a nine-hour day* than with the other standard paper. This means that in one year four printers could accomplish as much as six had previously done."

Cyko Conserves Electric Current

"IT WAS ALSO NECESSARY to reduce the wattage of the lamps, and this, together with the speed of the paper, meant much less electricity used. In this period of labor scarcity the financial saving should not be the only consideration. I do not, however, allow anything for the worry saved me in meeting my labor needs."

Cyko Quality Satisfies

"IF THE AMATEUR finisher will apply these proportions to his own costs, he will find that the price of CYKO is practically the same as that of other paper. Then if he believes as I do —that *quality of work* and worry about labor are worth something—he will not hesitate in making the change to CYKO Paper. As 'beauty is only skin deep' so the difference in the price of CYKO Paper is in the list price, and not in the final cost."

Ansco Company

Binghamton, N. Y.

THE LURE OF THE SERPENT
By SAMUEL ADELSTEIN

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

FAYETTE J. CLUTE, Editor

CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

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Some Notes On Enlarging

By J. Walter Doubleday

Bromide enlarging is steadily growing in favor, even more rapidly than would be the case were only those taking it up who were changing from the formerly popular view camera sizes to the present more convenient small type of cameras. I know a number of professionals who are making all their portrait work through the enlarging lantern, not alone for the purpose of securing larger prints than the negatives they care to make, but for the control and speed that the process permits. They have, of course, somewhat modified their apparatus, by eliminating such parts as serve mainly to give a large range as to size, and by adding other fitments that increase rapidity of production.

I have mentioned this, not as an introduction to the subject of apparatus, which I shall avoid, but as a means of suggesting the recognized simplicity and advantage of making prints in this way. Enlarging apparatus is of such varied form, depending upon the light available, the requirements of the user, and to some extent the purse as well, that space does not permit me to do the subject justice if I am to record a few of the things I have learned about the actual production of bromide enlargements, things common to the work, irrespective of the form of apparatus used. Enlarging on bromide paper is quite simple, the apparatus required is not complicated, and the results have the highest endorsement of our best professionals and our leading exhibitors.

The negative best suited for enlarging is one that is soft, yet brilliant. But it must be brilliant. The kind of softness that results from full development of an over-exposed plate or film, softness combined with thickness, will not give a good enlargement. Slight fog or veiling of the image is also detrimental and one must not assume that because such a negative will make a good contact

print it should produce a good enlargement. This is a common mistake. The reason for the difference lies in the different action of the light. When the light is projected through such a negative in enlarging, there is a scattering of light from all portions of the silver deposit, and when there is even a slight deposit where it should not be, as in the case of fog or thickness, poor results must follow. In contact printing there is not this scattering of light and not the same ill effect produced. One should strive for brilliancy with softness, and the use of a lens shade, particularly in the case of our rather short hooded and large aperture anastigmats, will do much in that direction. A safe dark-room light and a clean working developer will also help.

The strength of the light used in making the enlargements also has much to do with the quality of the negative best suited to the workers requirements. Or rather, one can, by selecting a certain form of light, accommodate the process to negatives of quite different quality. The thin, fully exposed, yet under-developed negatives that some professionals affect, can be made to produce good enlargements only by using a rather weak light, such as an oil burner or gas jet produces. Strong, contrasty negatives require a strong light; and, negatives carrying much retouching are best enlarged with well diffused day-light or a strong artificial light, like the arc, with groundglass between it and the condenser. The use of a soft-focus lens is also most advisable in such cases.

The truth of the matter is, the best plan is to find out, by experience, just what kind of negative is best suited to one's individual equipment, and then make negatives as near that standard as possible. It is quite obvious that only a worker with an extensive output to produce could equip himself with apparatus employing varying strengths of light as suggested above. A compromise, to some extent, can be effected by a judicious selection of different grades of paper offered; the range, since the introduction of the so-called chloride papers, with a speed somewhere between that of regular bromide and the gaslight papers, making this power of selection a valuable asset.

I suppose I should attempt to go into some detail on this latter point, but while the range is so wide, it is yet somewhat variable in different localities, and little would be achieved. At least, little compared to what the individual worker can best find out for himself by a very few experiments based upon the quality of the negative in hand and the maker's description of the various papers available in his case.

The exposure is the most troublesome factor of the entire process, but this has lost its terror to a great extent since the advent of developing papers. In the days of printing-out papers, with their visible image to serve as a guide, the correct timing of a bromide enlargement seemed to be much more of an achievement than was actually the case. The best plan, in my estimation, is to take each negative, as made, and give it a number that expresses something in the form of a ratio, something that will give an easily handled factor from which to figure the exposure in enlarging to any size. This can be done by making a correctly timed contact print on developing paper and noting the time, the time serving as the factor number. It is, of course, quite necessary that these factor numbers must all be determined under exactly the same conditions. A standard

A VALE IN ARCADY By JOHN PAUL EDWARDS
First Prize Landscape, California Liberty Fair, 1918

brand of paper must be used, one having little or no variation in speed, and the light and distance used in making the print must also be uniform.

If all one's negatives bear on their edge the number of seconds exposure required to produce a correctly timed print on, say, Regular Velox, exposed to a cluster of four thirty-two candlepower Mazda lamps at a distance of sixteen inches, little difficulty would be experienced in determining the correct exposure for any one of them for any size of enlargement, after a few experiments had been made. There would be a fixed relationship between these factor numbers and the number of seconds required for enlarging to different sizes, and the relationship could be easily determined by an experiment or two. One might find that the exposure required for a two-time enlargement, or enlargement to a certain commonly used size, was one and one-half times the exposure number established by the making of the contact print on developing paper. He then has but to read off the number on the margin of one of his negatives, multiply it by one and one-half, and he has the correct exposure for an enlargement of the designated size, providing that lens stop, strength of light, and grade of paper remains constant. If any of these are varied, proper allowance is easily made. A larger or smaller stop decreases or increases exposure in the same ratio as in regular work; difference in the speed of the papers used is determined by experiment, and of course one's light is practically constant except where daylight is employed. In this latter case an actinometer can be used to determine the variation from the normal, if any. Practically all of the annuals

carry a table giving the relative exposures for different degrees of enlargement, and I hardly need to occupy space with a repetition of one of them here.

Soft effects in enlargements are sometimes quite desirable, and we know of several firms that are making quite an enviable reputation on their bromide enlarging by using the less pronounced effect secured with the soft-focus lens employed for all their work. But all obtainable sharpness is often desirable, and we must be prepared to secure this last before we can regulate the amount of diffusion to our liking. Some workers find it very difficult to secure a satisfactory degree of sharpness, even from a negative that is undeniably sharp, and we will therefore take up a few of the possible causes for their difficulty. First, there is often an unsuspected lack of accordance between the chemical and the visual image projected by some lights, particularly the enclosed arc. Where this is the case, the variation must be determined by trial and allowance made for it in focusing. While the difference varies slightly with the size of enlargment, only the general difference need be considered and made up except where an unusually large stop is being employed. Where a condenser is used, failure to adjust the position of the light for different sizes of enlargement will also cause lack of sharpness. The light should be so placed that it is in the focus of the condenser for rays of light from the easel; in other words, the cone of light, after passing through the condensers, should come to a point small enough to pass through the stop of the lens. The distance of the light back of the condenser for different positions of the lens, which last means different sizes of enlargement, can be determined by focusing through a negative upon the easel for the desired size, then removing the negative and observing the distribution of the illumination as the position of the light is changed. Another frequently unsuspected cause of unsharpness is the use of the rising and falling, or the cross front, in bringing the image in the desired position on the easel. The center of the lens, of the negative, the condensers and the light, should all be in a line and not out of center with each other. It is also obvious that the lens carrying front of the camera or enlarging lantern must be in a plane parallel with that of the other elements, or this centering of the lens cannot be achieved. Dirt on the lens or vibration of some part of the apparatus during exposure is detrimental and the bromide paper should lie perfectly flat against the easel so as to receive the image in the plane of critical sharpness.

Soft effects are, as I have said, frequently the most desirable, both for pictorial and other reasons. A hard, black mass with a sharp outline, is much more objectionable than one with a softer edging, as any landscape worker can testify, if he has given the matter any thought. In portraiture, the breaking up of all suggestion of hard lines is almost sure to result in improvement. With the soft-focus lenses some most pleasing results are secured, and it might be well to point out that different makes of these lenses give somewhat different results. The worker will, if buying a lens of this type, do well to try more than one and decide for himself which best suits his requirements. Bolting silk, stretched on a frame and interposed about three or four inches in front of the paper on the easel during all or a part of the exposure, is a quite common method of securing a breaking up of the image. The distance from the paper regulates the amount of breaking up achieved and this distance again depends

THE WAVE By HAROLD A. TAYLOR
Second Prize Landscape, California Liberty Fair, 1918

upon the distance of the paper from the lens. A more delicate softening is secured by using two thicknesses of chiffon to face a cap placed on the lens.

In my own practice the mount on the lens is fitted with a wire frame in which a movable slide is held close against the front hood. This slide is a piece of cigar-box wood about three times as long as it is wide, the width being sufficient to well cover the front of the lens. The center of this slide is left solid, but a circular opening, large enough to permit free passage of light to the lens, is cut in each end. One of these openings is covered with two thicknesses of the chiffon material and the other with a piece of yellow glass, both let into the wood so as to be flush with the surface. With the center of this slide in front of the lens, the cap is on; with the yellow screen in position, the paper on the easel is in safe light while being adjusted in position; and, with the chiffon section in front of the lens, my soft enlargements are exposed. One could make the slide longer and include an unscreened opening, but in practice I found that lifting the slide out of the wire frame was less liable to shake the lens than trying to move it along in the proper position.

Even more important control of the results in enlarging can be secured by shading different portions of the image during exposure; or rather, during a portion of the exposure. A piece of cardboard, an old mount, preferably of a dark color and roughly torn to the desired outline, serves as the shading medium and is to be interposed between the lens and the easel, or at least, some little distance from the paper. This should be kept in motion during the time it is being used, in order to further avoid a too sharp outline, the length

of time it is interposed being proportioned to the entire exposure in accordance with the amount of holding back it is thought desirable. It is obvious that where the part to be held back comes fully within the boundaries of negative, this plan will not avail. One can then resort to a piece of the card torn roughly to the desired shape and fastened to the end of a piece of stout wire; an ordinary lady's hatpin answering admirably. Another plan is to attach the shading

WAITING FOR SUMMER — By W. C. SAWYER
Third Prize Marine, California Liberty Fair, 1918

piece to the center of a piece of glass and use this last as a support to enable it to be gently moved about so as to shade the part intended. Variations of these suggestions will suggest themselves to the worker and enable him to quite rapidly acquire the knack of exercising most beneficial control of nearly all his enlarging work. In fact, it will be found that practically every negative from which an enlargement is required is amenable to treatment of some kind along this line.

I might point out that availing one's self of these possibilities makes it advisable to somewhat increase the exposure time, and this last is best done by some other means than decreasing the size of the stop. The most practical method is to introduce one or more sheets of groundglass in front of the light employed. Using a slower paper may not give one just the effect desired,—different speeds of paper printing differently, and decreasing the stop affects the illumination where a condenser is used and sometimes introduces granularity in other cases, even resulting in an enlarged image of the groundglass diffuser behind the negative being recorded upon the enlargement.

Photography at the Liberty Fair

By L. E. Brackens

The California Liberty Fair, held in Los Angeles, September twenty-third to October twenty-sixth inclusive, incorporated a Photographic Salon that was in charge of a Salon Committee under the chairmanship of George F. Clifton. The large number of pictures received from all sections of the country and the exceptional high quality of the work submitted, speaks well for the enterprise and industry which this committee displayed. Over five hundred prints were

STORM CLOUDS — By DR. WILLIAM F. MACK
Third Prize Landscape, California Liberty Fair, 1918

submitted, of which number three hundred and thirty-eight were hung, including the autochromes hung in a special booth. The first two weeks the exhibition was on display at the Bracks Shops Building, Seventh Street and Grand Avenue, then in the Pavilion of Fine Arts, Exposition Park, in connection with the Liberty Fair.

In the landscape class, first, second and third prizes were won by John Paul Edwards of Sacramento; William M. Clark of Grand Rapids, and Dr. William F. Mack of Hollywood, California. Harold Dean Carsey of San Francisco, and Francis Orville Libby of Portland, Maine, received honorable mention. In marines, the last mentioned won first; Harold A. Taylor of Coronado, second, and W. C. Sawyer of Los Angeles, third; honorable mention going to John Paul Edwards. In portraiture, Edward Henry Weston of Glendale, California; Margarethe Mather and Louis Fleckenstein, both of Los Angeles, carried off the honors, with honorable mention to W. G. Fitz of Philadelphia,

Alice Boughton of New York and Dr. Percy Neymann of San Francisco. In genre, Mr. Edwards again won first, with second and third going to Albert Kelly of Toronto, Canada, and Jane Reece of Dayton, Ohio; Alfred J. McKenna and Margarethe Mather of Los Angeles, receiving honorable mention. Chester L. Hogan of Hollywood, T. C. Low, W. P. Powers and Dr. Dain L. Tasker, all of Los Angeles, with R. D. Miller of Hollywood, carried off the honors in the natural color transparency class, the last two getting honorable mention. In this connection special mention should be made of a fine collection of scientific subjects, photographed on autochromes by polarized light, the work of S. J. Keese of Los Angeles.

All in all, the salon was an excellent one and reflects great credit upon those who helped to make it a such a success. It is hoped to make it an annual exhibition and the support given this, the first, by the pictorial workers of the country bespeaks for those to come after a good measure of success. The large number of visitors and their high praise of the pictures was a source of no small gratification to the committee having the salon in charge as well as to the Fine Arts Committee of the Fair. Reproductions of a few of the prize winning pictures are shown on this and preceding pages.

The Law of Progress in Art

The course of artistic or other discovery appears to be very much the same as the succession of processes followed by an artist in the construction of a single picture, only that in the great field of human progress the work is accomplished by the race, and taken up successively at its different stages by relays of innumerable workers.

The construction of a picture is usually effected very much as follows: First, a rude charcoal sketch to get things in their places, and to indicate the division of the future labor. This first sketch is rude to such a degree that persons not conversant with art would not know what was meant by it, most of the curves being represented by angles and straight lines, even by the best figure painters; but, however rude, it is extremely useful as a marking out of boundaries.

Then comes a careful outline of the principal of these boundaries; that is, the lines enclosing the great masses. Then within these lines the dead color is roughly laid—roughly, though with consummate foresight. Then comes a second painting in detail, then a third in still minuter detail, and, with some men, even a fourth, fifth and sixth, of detail within detail, film over film, till the work has reached the highest excellence possible to the painter.

Now, the history of human art in its great relations to the whole race is merely a repetition of this process on a vast scale, extending its minor processes through ages, and employing not merely the fingers of one workman, but of all the best workmen in the world, generation after generation.—Philip Gilbert Hamerton.

Nature and art are too grand to go forth in pursuit of aims; nor is it necessary that they should, for there are relations everywhere, and relations constitute life.—Goethe.

An Efficient Home-Made Enlarger

By S. A. Schwarz, A. M. C. E.

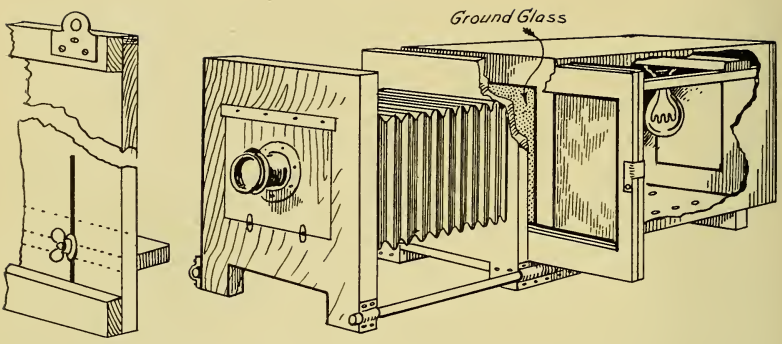
With Illustrations by the Author

Few are the amateurs who have not, at one time or another, wished that they possessed a few enlargements from their choicest negatives. For the fulfillment of such a wish, the plate or film is usually turned over to a professional finisher who, not infrequently, demands a good price for a rather poorly finished production. Should one dare venture a criticism, such as, "I expected something better", he is told that the negative is not quite suited for enlarging. In a measure this may be true; but then again, why make, or attempt to make an enlargement from a negative that is known, at the outset, will yield only an unsatisfactory reproduction? Of course, not every negative is suitable for enlarging, and therefore the entire burden of good results should not be placed upon the finisher's shoulders. Let the responsibility of producing good results be shared equally by the photographer and the finisher.

But if the photographer will make his own enlargements, the matter is simplified; and, in the following paragraphs I will give a general outline for the making of an enlarging camera that will equal many of the high priced instruments with which our photographic market is so liberally supplied. Without a doubt, one of the most interesting branches of photography that the amateur may take up, is enlarging. The injunction: "Take it small and then enlarge", has come to stay.

The first impression of many will, no doubt, be that because it is home-made, it will not give satisfaction. This is a sentiment that I can readily appreciate as, not so very long ago, I shared those ideas; I, too, belonged to that class of amateurs who preferred to pay out their good dollars for accessories rather than try to produce them at home, with little or no effort and at a fractional part of the price asked for the ready made article. We all possess a certain amount of latent mechanical skill that only awaits our call to action. Such statements as, "I am not at all handy with tools", and the like, have little real foundation in a majority of cases. Give your capabilities a fair trial, make up your mind to do the thing in hand, work at it conscientiously, and I feel sure that your efforts will be crowned with success. In addition, there is a certain amount of pride to be derived from being able to say that the apparatus used in making your enlargements is your own handiwork. The tools employed in the suggested construction are such as will be found in every household, thus minimizing the outlay by reducing it solely to the purchase of the material actually required.

Every enlarging camera, except those of the fixed-focus type, is composed of several units. These parts are rather co-ordinated than sub-ordinated;



for, upon the accuracy and care that is exercised in the construction of each depends the worthiness of the completed whole. The following are the principal units entering into the construction of the enlarger: The lamp box, the illuminating agent, the sliding frame or front-board, the bellows, the plate or film carrier, and the easel. I have endeavored to enumerate these in the order of their importance to establish an orderly sequence in describing and assembling them.

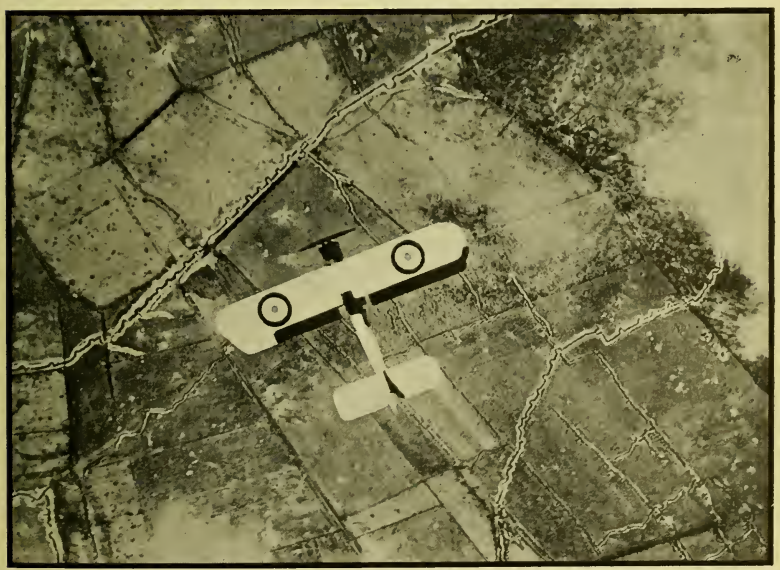
The lamp box, the compartment that encloses the illuminating agent, may be made of either sheet metal or wood. The former is especially suited if gas or electricity is to be used as the illuminant; the latter where electricity only is to be employed. If the first is used, the ability to handle a soldering iron becomes necessary, as all joints should be well soldered. If, on the other hand, the lamp box is made of wood, average mechanical ability will be sufficient. A careful examination of the drawings herewith will greatly facilitate the construction of the apparatus. In all cases I have endeavored to make the dimensions such that a proportional increase thereof will in no way destroy the correct proportioning.

We may next consider the illuminating agent. The choice of this is, in a measure, controlled by the facilities the amateur may have at his disposal. Inasmuch as every, or nearly every, modern dwelling is equipped with electricity, our first choice falls in that direction. Using this as our illuminant, the lamp box may either be constructed of galvanized sheet iron or of wood, such as seven-eighths yellow pine or half-inch oak. Should, however, a Welsbach gas burner be used, it is advisable to combine the two materials: i. e., make the sides of wood, covered with asbestos, and the base and roof of sheet metal. In any event, provide freely for the proper circulation of air by drilling a series of three eighth-inch holes about two inches apart in the base of the lamp box and also near the top of the door in the back. These last can be trapped if the light escaping is likely to do any harm.

Extreme care should be taken in the mounting of the lamp or bulb, so that the bridge or cross piece to the under side of which it is attached should slide freely along the two side cleats provided for this purpose. Furthermore, these cleats or shelves must be placed at such a height that the filament of the

bulb, or the center of the mantle in the case of the gas burner, shall be in direct line with the center of the lens, which last establishes or conforms to the centers of the several parts of the camera. This is perhaps the most difficult and at the same time most important adjustment involved in the construction; and, while it may seem to be a task beyond one's ability, with a little patience, it can readily be accomplished. As for Welsbach mantles, any good make will answer the purpose; but, if electricity is used, I would strongly recommend the concentrated filament nitrogen bulbs. The illuminating power of these lamps, which may be obtained in almost all sizes and candlepowers, is very great, while the current consumption is comparatively small. I have found one hundred and fifty candlepower the most satisfactory, as well as useful. Once one has decided upon the candlepower, and thus indirectly upon the size of the bulb, it is advisable to avoid a change, as the introduction of a different lamp necessitates the readjustment of the lamp support to maintain the centered position of the light.

The front part of the apparatus consists of three distinct units; the front or lens board, the rear bellows frame, and the bellows itself suspended between the two. The front or lens board is one solid piece of the seven-eighths lumber, 8x13½ inches, with a piece cut from the center of the bottom leaving a piece for a foot at each side, and a circular aperture cut in the center to accommodate the lens flange. Inasmuch as this portion of the camera gets more usage than any other, it will be best to cut it from oak, even though the rest of the



A BRITISH AIRPLANE FLYING OVER THE TRENCHES ON AN OBSERVATION TRIP. Above this machine is another airplane from which the photograph was taken. In addition to being a remarkable airplane picture, the photograph is noteworthy for giving a clear view of the trench systems and the shell-pitted battlefield—Copyrighted by Committee on Public Information

instrument be of pine or other soft wood. If made to take the lens board from one's own camera it will prevent the necessity of a separate lens flange when the camera lens is used.

The frame that supports the rear end of the bellows is almost the same the one forming the front of the lamp box, except for the two legs. As rigidity here is important, and as that depends upon the accuracy of construction it will be best to make use of strong lapped joints instead of the more easily made butt-end ones, taking extreme care to see that the corners are absolutely square before glueing them together.

We next come to the construction of the bellows. This is a far simpler matter than many an amateur has ever thought. In addition to its simplicity, it has the added advantage of cheapness. The materials needed are few, namely: A 7x7 piece of seven-eighths wood, cut very accurately for a pattern; forty feet of twenty-two gauge brass wire, and one square yard of focusing cloth material. Cut the wire into fifteen pieces, twenty-eight and a quarter inches long, and bend each one around the pattern block, hammering the corners down well so that they will be as square as possible, finally touching the two overlapping ends of each with a bit of hot solder before removing from the block. These wire frames will be seven inches square, the fifteen being sufficient for a bellows thirty inches long. Next take the cloth material and cut it down to 29x30, sewing the two shorter sides together to form a straight sleeve, using the extra half inch of each side to form a specially strong overlap seam. We are then ready to assemble and finish the bellows.

Insert the first wire frame into the sleeve exactly one inch from the end, and firmly fix in position by sewing with strong thread at each corner, as well as between. The second frame is placed two inches from the first, and attached in like manner, continuing until all are in place with a separation of two inches between each two. Put under pressure for a few hours; and, when the pressure is removed, one will possess an excellent bellows that will always keep its shape.

The final step in the construction is to attach the bellows to the front and rear frames, but we must first attach the latter to the front end of the lamp box. To do this, take two pieces, 1½x1½x3, and fasten them, using one and three-quarters inch stove bolts, to the underside of the two front corners of the lamp box in such a way that one and one-eighth inches project out in front. To these the rear bellows frame is attached by means of three wood screws through the lower corners thereof, as shown. A five-inch strip of the three-eighths inch lumber nailed on below and between the two blocks will form a bottom for the one and one-eighth space in which the carrier slides, as shown in the sketch. As an additional assurance of rigidity and parallelism, attach two brass rods, long enough to accommodate the full extension of the bellows, to the front or lens board by soldering their ends into small sleeves as shown, and then providing snugly fitting sleeves on the outer side of the three-inch blocks through which the long ends slide.

An enlarger of this type requires no condensers, but in their place must be installed a piece of groundglass; or better still, opal glass, held securely in position just inside the front opening in the lamp box in any way

found convenient. A frosted globe form of lamp may also be used in place of or to supplement the ground or opal glass for diffusing the light. I might here digress slightly to say that the amateur who wishes to provide his own substitute for the ground or opal glass may do so as follows: Into thirty ounces of water put thirty-five grains of good quality starch, boiling this mixture until it is as clear as so doing will make it; the finer the quality of the starch the less time required. Strain through two thicknesses of linen or muslin and apply to a clean sheet of glass by either floating or painting on with a soft camel's hair brush, using the solution either hot or cold.

We will next consider the construction of the plate or film carrier. Make two frames, 9x12 inches outside, with an opening in each that is a quarter of an inch less than 6x8 inches; the combined thickness of the two not to exceed the allotted space, the one and one-eighth inches between the rear bellows frame and the front of the lamp box. In one frame cut a recess around the opening deep enough to accommodate one piece of glass; in the other deep enough to hold two pieces. Hinge one long side of these two frames together so that the recessed sides face inward and bring the three pieces of glass together. The middle one of these glasses serves a double purpose: its removal provides space for a glass plate negative, while in place it holds a film negative securely in position. The two frames are held in close contact by the clamp, shown in the sketch, which binds them firmly together and at the same time securely holds the plate or film placed between them for enlarging.

A SPRING LANDSCAPE—Enlargement made with apparatus described

The more essential parts of the enlarger having been discussed, there still

remains the easel, which should by no means be considered unimportant. Most workers focus on a smooth board surface and then fasten the paper thereto by means of push pins or thumb tacks. This method has the disadvantage that it is not easy to adjust the paper in the correct position on the board; and, the tendency of the pins to throw a shadow or mar a portion of the paper necessitates the trimming away of the margins of the print. Furthermore, owing to the paper's natural tendency to curl, it rarely if ever lies flat, making it almost impossible to assure an all-over sharpness of the image, except by using a rather small stop. In order to overcome these difficulties, I made my enlarging easel a slight departure from the plain board, and have found it very satisfactory. Its construction is simple, in fact, well within the capabilities of any amateur. One requires a seven-eighths inch board, 18x30 inches in size; yellow pine serving the purpose admirably. Plane one side fairly smooth and true, and just back of the upper and lower edges nail a one-inch thick strip of the same wood to prevent warping and also to keep the board far enough away from the wall or supporting surface to give the winged nuts of the shelf supporting bolts free play. This shelf is a thirty-inch strip of the same wood, two inches wide; which, in order to be adjustable to various points of elevation, is fitted with two bolts that fit snugly into two slots cut in the easel to extend upright from the bottom about ten inches, six inches from each end. Six inches from either end of the shelf board drill a three-eighths inch hole about one-half inch deep, depending upon the size and thickness of the bolts employed. Into these holes introduce the head portion of the bolts, setting them perfectly square and bind them securely by filling up the hole with a mixture of sawdust and glue, allowed to harden.

As the desired size of enlargement is secured by moving the apparatus instead of the easel, the latter is best hung against a wall or other firm and permanent support. The flat hangers shown in the sketch can be easily made from sheet metal. Great care should be taken to get the easel perfectly plumb; this being readily accomplished with an improvised plumb line and a few pieces of cork or felt, judiciously glued to the back of the board.

To use the enlarger, assuming that an 8x10 enlargement is desired, we proceed as follows: Take an 8x10 printing frame loaded with a sheet of white paper behind an 8x10 piece of clear glass, and place this upon the shelf of the easel, adjusting it to include the desired portion of the picture being thrown thereon, by raising or lowering the shelf, and by moving the frame along thereon. Focus the image very carefully; then replace the white paper in the frame with a piece of bromide paper and make the exposure. The front of my lens cap is a piece of deep orange glass, and this enables me to see the enlarged image up to the moment of exposure, as well as facilitating the replacing of the frame after changing to the bromide paper. The sheet of glass is allowed to remain in the frame, as it does not affect the enlargement, if clean, and serves to hold the bromide paper perfectly flat.

The law of worthy life is fundamentally the law of strife. It is only through labor and painful effort, by grim energy and resolute courage, that we move on to better things.—Theodore Roosevelt.

"Exterior Interiors"

By Richard J. Grace

With Illustrations by the Author

Tom stepped across the little stream that intersected the trail, looked up in the direction from which it came, and stopped in admiration of the view. Being twenty years older I do not travel with Tom's speed; but, as I gained his side, I heard him mutter, in one of his "advise me" tones: "Too dark below; and the sky would be over-exposed". Gazing over his shoulder I saw a series of rock-clinging falls framed in overhanging alders, among whose shadowy stems the light green ferns stood out in soft relief. Higher up the water fell thinly, in sparkling drops, over a rock ledge, sun-pierced brush forming the background, with a small patch of blazing, cloudless sky above. It was not a picture, it was merely attractive; but, with range of contrast from the bright sky to the deep shadows at the base, it was too much for Tom, who, only recently had shown me, with pardonable pride, a still life taken almost directly facing his dining-room window. His cut-glass bowl showed a few harsh high-lights, but there was a goodly amount of shadow detail, yet he stood before me confessedly unable to manage a subject that was far more worth while than his carefully arranged mound composed of over-ripe bananas, last year's apples and a rusty grapefruit of which he was so proud.

There are a great many other photographers like Tom who lose many an outdoor scene that is full of charm and future reminiscence, sim-

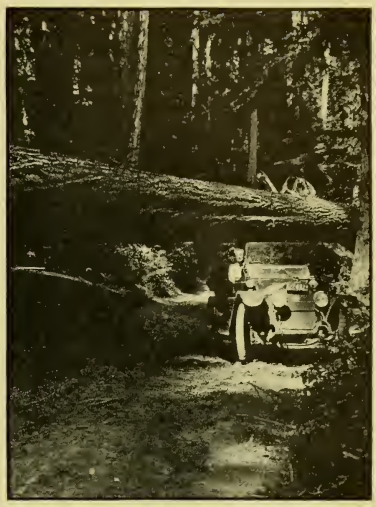
PEAK OF MOUNT JEFFERSON—Forty-five miles distant, over ridge. Taken from Squaw Mountain at 6:30 A. M. to secure horizontal lighting. The use of immediate foreground and middle distance detail, with small amount of sky, gives perspective, distance and atmosphere.

LOOKOUT STATION—Squaw Mountain. Illustrating elimination of sky and inclusion of interesting foreground. Trimmed down from a larger print.

repute, and Tom was going in for landscape photography, having received a further urge through his success with a miscellaneous lot of snow-peak subjects that were taken a little later on the same trip. Tom's camera has a cheap red bellows, a rapid pseudostickmat lens, and it says T I B on the shutter case, but he is now getting real pictures, pictures with correct color values, shadow detail, and a quality that will enlarge to eight by ten. Personally I prefer double-coated plates and their elimination of all halation; but Tom, and all the other Toms, the little red bellows notwithstanding, can, when they learn to "take it slowly", secure results that surprise them and cause their friends to ask their advice. A photograph of the ply because they fail to realize that such subjects are really interiors, "exterior interiors", if I may coin the phrase for the benefit of photographers who have applied the name "interior" to a different class of subjects. To the painter such scenes are "interiors" and are so designated. In Tom's subject the foreground was as dark as a carpet, and as much walled and roofed over, as far as lighting was concerned, as though it were surrounded by plastered walls built by the hand of man. The light that filtered through the foliage, together with the small patch of visible sky, approximated that admitted by the normal amount of window area in the average room. And Tom could not grasp the situation until I had presented the case to him, much as it is here set down in type, minus the deletions. It was a revelation to him: He reached for my tripod, borrowed my ray filter, stopped down his lens and gave a five-second exposure.

A week later the overworked glass bowl and over-ripe fruit was in dis-

GROUP—Taken in an "Exterior Interior". Ortho plate, f-6.3 stop, one second exposure



AN "EXTERIOR INTERIOR"—Showing extreme range of contrast. The first is a time exposure, with filter, on an ortho plate, and would have stood much longer time. The second is a snapshot on an ordinary emulsion

Golden Rod Limited rounding the curve at Two Tanks Gulch at ninety kilometers an hour, taken in one twelve-thousandth part of a second, may be an interesting impression of a fast train congealed, and it may be a scientific and chemical achievement, but it is so unnatural a record that it could not be classed as a picture. Splashing a lot of light on the face of a film, in the unceremonious manner necessary with such a shutter speed, seems to leave but a dazed and sketchy impression. Shadows have not sufficient detail through there being no time to record them; and, continued development, in the vain hope of obtaining something that does not exist, fills up the high-lights until they print chalky white. Then the victim of the "hurry up" method uses a glossy paper in the expectation of coaxing out more detail, and the horror is completed.

A characteristic of these shady wood scenes or subjects, one not generally recognized is, that it is almost impossible to over-expose the plate or film in taking them. With a time exposure it would almost seem that the plate or film, having been handled in a leisurely and gentlemanly manner, responds more cheerfully and gives one a degree of shadow detail and color value that it will never yield when slapped in the face with a handful of light rays in the excitingly short time that the shutter can measure out. One of my photographic friends, in a recent letter, commented upon this advantageous feature. He cited an experiment he had tried in connection with the tacking up of a small printed notice in bright sunlight in the open, and again in the same good light, but in one of our "exterior interiors". In the first case, a slight over-exposure, or an exposure of sufficient length to have obtained shadow detail had there been any in the view, over-exposed or obliterated the wording. In the other case, no reasonable amount of exposure had any tendency to eliminate the legibility of the wording.

The reason for this is not easy to explain, except perhaps, by calling attention to the tendency of light, heat and chemical action to manifest itself more strongly where the conditions are most uniform. A few small pieces in an annealing oven require an amount of watchful care that is entirely unnecessary where a larger number of pieces of varied sizes are included. A large portion of our "exterior interior" subject being made up of deep shade, there seems to be a sort of protective action set up that restrains the too great density in the light areas. This, of course, with full exposure; with under-exposure one can easily block up high-light areas; and, by forcing development, bring out halation that would not otherwise manifest itself.

I found Tom had another obsession; he must have plenty of sky in his outdoor pictures. When, for example, he photographed Mount Hood, the top of the peak did not rise above the lower one-third of the print, over two-thirds of the picture space being occupied by sky. His defense was that it looked that way to him. I watched him work, and found it was as he claimed, for he was not looking forward along a level as he would at an ordinary scene, but at a point about two miles higher than the ground on which he stood; he was, in fact, pointing his camera up a thirty-five per cent grade. Photograph your mountains with a level camera and let your sky occupy not more than one-quarter or one-fifth of the picture space. Do this and the mountains will more nearly record their actual heights; and, with the foreground and middle distance included, you will get the atmosphere so necessary if a natural perspective is to result. No human being ever saw a mountain range or peak as it is portrayed in the average photograph, as a bald pinnacle surmounting a ridge. If you have ever been as close to a peak as the chopped off appearance of some of these pictures suggest, you will remember your disappointment as you viewed the slopes extending upward to the squat dome you can hardly recognize as the jagged spire whose rugged outline you had admired from a distance. A "close-up" of a mountain loses all charm, height and perspective; having lost its distance through absence of the foreground and the foothills, that so naturally lead one's eyes to the summit. Cut off short at its base, it closely resembles, in its naked geology, an unsightly mound in the foundry yard.

Ornamental Art

Ornamented Art, pure and simple, is like the measure and rhythm of a verse. A verse may scan, may have a proper accent and cadence. In short, may have all the music of harmonious versification, and yet be made up of words that are mere nonsense; and so in ornament, it is not necessary to its beauty, as ornament that it should have any meaning. It is quite sufficient that it should be beautiful.—F. W. Moody.

Only a hill, and a recess of calm water, and a breath of mist and a ray of sunset. The simplest things, the frequentest, the dearest; things that you may see any summer evening, by a thousand streams among the low hills of old, familiar lands; love them and see them rightly—Andes and Caucasus, Amazon and Indus, can give you no more.—Ruskin.

About Some Photographs

By the Hobo Photographer

With Illustrations by the Author

Pictures of the "Big Ones"

Of course the big boys in the studios who have a real skylight and a girl to show sample prints and someone to mix the hypo, will not be deeply interested in how we boys on the road have to chase the dollars wherever we find them. But the fellows whom I find wishing they had a few more plateholders and a better lens, will, perhaps be mighty interested in any tips the old Hobo can hand out.

I want to speak about the chances we little fellows get now and then to pick up some easy money from pictures of the "Big Men" of the country. I have seen the price of a case of plates made from one such picture, and the price of an overcoat from another.

When you hear the "Big Fellow" is due in the town that you happen to be working at that time, tell the landlady to call you early. The chance always comes to any good, "brassy" photographer to get his snap: The big men don't mind being snapped, they are used to it; and anyway, they think you are a

THE WIZARD OF MENLO PARK

A GROUP MADE IN DETROIT

press photographer and won't turn you down. Get close in and take your time; get a good sized bunch of faces around the main figure, and then shoot.

I send along a snap I made of Mr. Edison when he was touring the country on his way to the Panama Pacific Exposition. He saw I was more than anxious to get a picture, so he stopped the car and posed for me. Some prince of a man, Mr. Edison. I got my picture and cleaned up a neat little sum on it. I sold about a thousand cards at ten cents straight; and, as one of the men in the car was the big school man of the town, I sold each of about a dozen teachers a nice four-dollar enlargement to present to their superior with their compliments and hopes for promotion. They enjoyed it, and the big fellow was so pleased he let me work his office force and sell several more presentation enlargements. This does not sound just right, but the girls all wanted a big picture of Mr. Edison and they, no doubt, figured they could afford, charging it off to their publicity account.

The other picture is a postal from a large negative I made up in Duluth a few years ago. The larger print shows the crowd around the "Big Man", who, in that case, was the gentleman who had just discovered the South Pole. I got all the other Norwegian gentlemen, who had come to meet him at the train, to stand by him, while I made the picture. That afternoon, after the big speech-making, I went in with my proof and made more real money than I had seen in Duluth in a month.

Remember, boys, to get all the people you can in this kind of a picture. They like to show it to their friends and say: "See me over here". It's human nature; I myself am sometimes sorry I can't get into a picture with some of the great men myself.

Photographing a Certain Spot

I want the boys who are wasting a plate now and then, "just to amuse

themselves", while they are out after the bread-and-butter kind, to see this little print herewith. It shows a place that I had kept under my eye for some time before I found it to my liking for an exposure.

"THE OLE HOSS TROUGH"

This spot was located on the trail leading to the top of a little mountain, where I was making pictures of some gangs of men at work. The boss of the gang fancied the "Ole Hoss Trough" would make a picture; and, as he was most obliging and helpful, I wanted to get the picture for him. One day, in coming down the hill, I found the stage set for me. The cook-shack had backed off into a shadow with a touch of light to keep it from looking cold. The hills in the distance were full of sunshine and not too forward in their bid for notice, while the old trough itself was decorated in great style. Its ever-present mudhole was buried in a shadow, while its ragged edges and cross-pieces were powdered like a reception girl's nose. I cast my eye over the glorified weeds and stones, all nicely arranged and lighted to give the proper depth of perspective, and set up my old view box in a hurry.

I placed the lens where it could see into the trough and still get in the skyline. In deference to the art hounds, I cut off the end of the trough and made a mental apology for putting the high-light in the middle of the plate, where I wanted it, and made the exposure.

I want the rest of the boys to see the picture and to remind them again that it pays to do little things to please the boss of the gangs they may be photographing. And besides, there is a considerable bit of pleasure in making a picture now and then without having to think about orders. In this particular case, however, I found the boys all interested enough in the picture to give me a big enough order to pay the excess rate on my baggage to the next town.

The Story of a Moonlight Picture

I have journeyed over quite a bit of territory and read not a few "moon-

THE PICTURE MADE BY MOONLIGHT

light" articles in the camera magazines, but never have I seen an article or heard a story concerning anything like my own experiences with the pale light.

I am sending two prints herewith to show what I am talking about; they are both of the same little house from the same viewpoint. The critic says: "The little print is flat", but I wish to enter a protest, for it is some fine little print. It was taken by moonlight and has a right to be lifeless or flat, or most anything else you please.

The thing I want to say is that most of the moonlight pictures are made in the late afternoon, about four o'clock, and are foisted off on the unsuspecting as the real thing in moonlight views. The real ones, made by moonlight, are not so far behind those made by sunlight, if they are properly exposed.

The moon has, on several occasions that I know of, served to light up scenes that were afterward sold as daylight views. The print of the little house in the trees was made, one evening, on a bet, at a mining camp. I wagered the owner of the camera used, that I could make a picture in the night with it, despite his declaration that it was no good and had never made a good picture. We set up the camera in the front door of the assay office, where they had let me fit

THE SAME VIEW MADE BY DAYLIGHT

up my developing room, while I worked the mine. We let the camera stand, using an f-16 stop, for ninety minutes, and then developed the plate. I won the bet.

The other picture was made in the late afternoon with a light ray filter, just to show the view by daylight. That was a wonderful little trip up to that mine and made the old hobo photographer almost wish he was a miner and could live there awhile. At any rate, I brought along the prints as a reminder of the moonlight and the long slanting light between them in the afternoon. If you try moonlight, give your plate a couple of full hours' exposure, unless you are in the desert atmosphere, where the light is very clear and the air rare.

Meter Memoirs

By Douglas Wetmore Clinch

My first distinct recollection of photographs having a subdivision may be associated with events some ten seasons ago. There were, for instance, a set of negatives made in the North country while shooting, fishing, etc., and the prints which came to my attention from associates in warmer countries, such as India, Florida and California. None of the parties involved were, in the full meaning of the word, photographers, and all used what might be termed "fool-proof boxes" of a fixed focus. At least all were film cameras, and no effort was made to focus each exposure separately on a groundglass. Without exception the outdoor exposures from the warmer countries were much more sharp and full of detail than the pictures made in the North.

There was no denying that latitude was the determining factor.

Following my return from the North, I sought out a genial soul who dwelt at length on the subject of anastigmat lenses, the use of the exposure meter, etc., and forthwith I sought amid the archives of the local photographer's store and, after much blarney, bought second-hand, the only meter in town. I had come to the conclusion that my camera was at fault and that a meter was necessary, no particular brand, just a meter.

When I returned to town again, I had several distinct recollections. I remember for instance, one morning on the Caribou Hills.

"Ah"! said I, "there is my subject, now where is my watch (it was very cold and I wore mittens), now I must bend over so that when this sensitive paper comes into place there will be no bright light to strike it, let me see—um—five seconds, at stop f-5.6, but I want to use f-11, that makes—and, oh yes, there is snow, so I must turn over the meter and—it says to reduce the time, that makes, Oh damn!" for, in turning the disk, the back had sprung out of place, the red woolen pad had dropped to my feet, the precious paper

blown to the various winds of heaven, and my subject, a feeding caribou disappeared, the sun had gone under a cloud.

The next season I was beguiled by the advertisements concerning the wondrous speed of focal plane shutters. "In that poor light", quoth I, "what one needs is a ——flex camera and H. & D 400 plates", and I set forth again. Since the full opening and the marvelous shutter were recommended for fast work, of course, I also tried them for still subjects, and the result was,—well, hardly gratifying. My conclusion was that some meters might be all right if one could tote along a boy with an adding machine to make calculations.

Forthwith I tried another set of meters, and then I found, in one instance, that the manufacturers turned out cameras that leaked light and had bent standards, or frontboards. So those pictures were hardly a success either.

Now, all these experiments were conducted in or about the same latitude. Therefore I went on other trips and the following results were shown: For instance, in 1915, there were three No. 3 A Kodaks in our party. Luckily I took along a Harvey Meter, a tripod and an Isos No. 2 screen. Quoth one of the 3 A owners, "I have no time to bother with such equipment; why I carried this camera all over Europe, and you should have seen the pictures I made". On returning to the city that season we found we had the best set of negatives any of us had ever seen. In 1917, my companion had an old twenty-dollar-kodak, and he likewise was certain as to its possibilities. He borrowed my meter and when the negatives were printed, he admitted they surpassed any he had ever even dreamed of procuring.

One Sunday morning in town, during the winter we wanted some interior portraits of the men at breakfast, reading the paper, etc. "Wait a minute", I suggested, "I have regular film, there is bright sun outside, you are six to nine feet from the window; all right, we will double the time and give six seconds at f-11." Afterwards, those negatives were exhibited at the Cleveland Show.

During the fall of 1917 we made a moving picture of a moose-shooting trip. There were all possible lights to contend with. Yet when the negative was developed in New York, the professional troubled himself to write me a letter of appreciation. The negative was perfect.

Now these various experiments with all types of cameras were made with regular film, which can be purchased at any store. Many of the cameras can be had new or second-hand for a small sum. In only two cases were they made to order, to wit, the ——flex camera and the No. 3, 3¼x4¼. My conclusions as to vital factors are as follows:

The first consideration is the latitude and season; the second is the light at the moment, varying from bright sun to dull cloudy; the speed of the film or plate used; a tripod for all still subjects; the smallest stop the wind will allow; a good color screen, three times; the particular light for each subject, and not one exposure for all subjects. To totally disregard snow, but to always expose for the darkest part of the picture, and let the high-lights take care of themselves. Careful development in the developer prescribed by the manufacturer of the film for that particular emulsion. Careful washing and drying. The proper paper for each print.

If there is anything to be added to this, it may be summed up in the following: A carefully tested rising and falling front camera that does not leak light, has a broad base and rigid standards, a focusing scale tested on a groundglass with a focusing glass, and a tight back which holds the film flush.

Frankly, I have to thank George L. Harvey for many of these opinions. I have worked alongside of this gentleman in his experiments, and know that each exposure recommendation on his Harvey Meter has been made only after repeated tests. For instance, he has made exposures with many cameras in the latitudes mentioned. He has used each of the plates mentioned, and he has developed them in the developer recommended by their respective manufacturers. In addition, he has developed each of these plates in every standard formula and worked out several other formulas not on the market. Every light condition referred to by him on his meter, he has also used with each plate and film. Again the eight divisions of outdoor subjects have been tested separately, with and without a screen.

The same care was used in making pictures as divided by the subjects on the inside of the slide. This pertains to the stopping of motion with lenses of various focal lengths; night exposures, both twilight and by electric light, especially in cases of shop windows and street scenes. His daylight interiors have called for hundreds of experiments, while his daylight interior portraits have revolutionized that field for amateurs. The color plates section is equally well worked out. These experiments have been carried further, in his "Circular 25"; and, it is interesting to note that the experiments of the Allied Air Service in making photographs agree with his recommendations.

It may be asked why will not other meters be found equally satisfactory? The answer is that they do not allow for changes in latitude and season or subject to be photographed without a very involved method of working out, with pencil and paper, the proper exposure. For instance, you are sitting on a beach and using a paper actinometer. Its reading would be the same, after some trouble with a watch, etc., for a view of the sea, a distant ship, an airplane in flight, beach subjects, while if you turned around and desired to photograph a near landscape or building—you must—according to such a meter, use the same exposure for all such subjects.

This is also true of meters where you judge the strength of the light by looking at various subjects through a glass of various densities, or a meter of the tube type, in which you look through a tube with a slot, which may be enlarged or reduced, in order to judge the strength of the light. It is obvious that such a meter cannot be read correctly for different classes of subjects at one exposure.

Again, if you are photographing a building. If it is a white building, it will require a certain exposure. If the building is all or any part in shade, a still longer exposure. If it is a dark building, another exposure is essential. Likewise different rules have to be followed in making photographs of skyscraper shaded streets. Of course, an actinometer may be used in the shade, but this is impossible with distant landscapes and airplanes in flight. It is obvious that a distant landscape requires less exposure than a near landscape. Yet

the readings of tint meters or visual meters will be the same for all these subjects. And it is true that the paper used in the actinometers is also not always of the same speed.

Regarding the speed of the shutters of the focal plane type as compared with those of the compound type, Mr. Harvey made some very interesting experiments by testing the same on a white disk revolving on a Victor record. Many exposures proved the recommendations as made on his meter to be correct. He also proved that no allowance should be made for altitude in making exposures. Always it must be the particular subject to be photographed.

In conclusion, I have discarded all my other meters and find I derive a great deal of pleasure in not only using this exposure meter in making my pictures, but in studying it between times. Of course, as in using any good meter, one soon learns by heart many of the ordinary rules, and it is not necessary to resort to the meter on every occasion. On special subjects, however, even professionals of experience dare not trust to their memory, and for this reason find a reliable exposure meter invaluable.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

AN "AUTOGRAPHIC" CONVENIENCE: The stylus that the Eastman people furnish with their Autographic Kodak is too short for me, with my hand otherwise trained, to do much inscribing with. Trying to devise some means of lengthening it, I hit upon one of those lead pencil holders—mine is inscribed "International 'Lagoline'," whatever that means—but I found that the stylus fitted snugly into the groove intended for the lead. Tightening the screw at the head of the holder clamps the stylus firmly and makes the combination very solid, and one can imagine the improvement the added length affords. A pocket clip from an old pencil I had used for years was fitted, and there you are; the snuggest thing for the purpose, just perfect, that's all there is to it.—R. H. Jr., Alabama.

ENCLOSED ARC ENLARGING: Correction of the focus must be made when enlarging with the enclosed arc and to determine the amount of shift required is not difficult. For the trial negative it is best to use one with sharp lines drawn in India ink, or one can take a spoiled negative of fair density and scratch lines in the film about a quarter of an inch apart. Take a strip of bromide paper and pin one end flat to the easel, and the other to a block or something that holds it out at a slight angle to the surface of the easel, marking its position. Focus on the flat portion, make the exposure, develop the strip and then pin it back in the exact position it was before. One of the lines on the strip will be sharper than the others, and it will be easy to measure from the edge of the strip where that line cuts it, to the surface of the easel, and that distance is the "shift" necessary with that particular lens. Different sizes of enlargement require very slightly different shift distances, but the variation is so small that it can generally be ignored.—A. S. D., Florida.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

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Silver Must Be Saved

While the Government control of the precious metals, limiting their use in non-essentials to avoid waste and thereby conserve for war-winning purposes, has not yet affected the photographers, the photographers should not delay in acting in harmony therewith. Because photography is considered an essential business and will, no doubt, enjoy a measure of freedom from restriction of supplies, that does not mean that waste is allowable. Waste of silver is unpatriotic and unbusinesslike; and, when we consider that every plate, film or piece of paper that the photographer uses becomes a means of wasting this metal so valuable to the Government, failure to limit such waste to the lowest possible amount becomes almost criminal. Silver, as you know, is a photographic necessity. Were the supply cut off or curtailed your photographic activities would cease or become lessened accordingly. With fully one-half the silver in our plates, film and paper being left in our fixing baths to be, as they too often are, thrown away, the necessity for action becomes clearly apparent; and more, neglect to act becomes entirely unexcusable. Save the silver, prevent this waste, do your share to carry out this war measure. Saving this silver is not difficult, and it pays handsomely; and, it may mean much in the life and preservation of your business. Suppose, for example, that a certain large body of users of wheat flour persisted in allowing half of what they received to waste down the drain pipes of their establishments when it could easily be saved. What words of condemnation would be strong enough to express your feelings, or the feelings of any good citizen? Cease wasting silver, cease your thoughtlessness, cease your disregard of ordinary business economy and start to save this precious metal at once. On another page, in our "Notes and Comment" department, will be found full and complete instructions for the few simple manipulations necessary. These instructions are from the current issue of *Studio Light;* and, with that endorsement, virtually that of the research laboratory of the Eastman Kodak Company, full confidence may be had in their simplicity and effectiveness. Look up these instructions and follow them at once. Silver must be saved.

Pittsburgh Salon—Preliminary Announcement

The Sixth Annual Pittsburgh Salon of Photography will be held, as heretofore, in the Carnegie Institute, Department of Fine Arts, the date being not yet decided further than that it will fall in the month of March, 1919; the last day of entry being about the tenth of February. We are pleased to be able to make this early an announcement, as this Salon is one that has always been managed in the most satisfactory manner, particularly in the matter of courtesy and consideration shown exhibitors, and we trust that the pictorial workers of the country, and particularly those of the Pacific Coast, will not fail to give

it even greater support than it has received from them in the past. Applications for entry blanks and conditions of entry should be made to Charles K. Archer, Secretary, 1412 Carnegie Building, Pittsburgh, Pennsylvania, so that they will be forwarded as soon as ready. Further announcements covering exact dates will appear in our next and following issues.

The Next Los Angeles Salon

The Second International Photographic Salon, under the auspices of the Camera Pictorialists of Los Angeles, will be held in the Gallery of Fine and Applied Arts, Museum of History, Science and Art, Exposition Park, Los Angeles, California, U. S. A., from January third to thirty-first, 1919. All pictures from the United States and Canada must be mounted, preferably on white or light-toned mounts, not to exceed twenty-six inches in their greater length; while prints from abroad should be sent unmounted. The back of each entry should bear, in addition to the name and address of its author, title and number, printing process used, and if for sale, the price. Pictures should be sent charges prepaid and addressed, The Photographic Salon, Museum of History, Science and Art, Exposition Park, Los Angeles, California, and an entrance fee of fifty cents must accompany each blank, the latter and all correspondence to be addressed, Ernest Williams, Secretary, Room 31, Walker Auditorium, same city. The entry blanks can be obtained, in the case of local workers, directly from this office, or from the Secretary, Mr. Ernest Williams, as above.

The success of the last salon held by this body of earnest workers assures us the coming one will merit a full measure of consideration and co-operation from the pictorial workers of this and other countries. As the prospectus explains, the aim is to exhibit only that class of work in pictorial photography in which there is distinctive evidence of personal artistic feeling and sentiment. All pictorialists are cordially invited to contribute, and they should all make an effort to do so. All work sent will be given every care and attention and will be returned prepaid promptly at the close of the exhibition.

The great artist, whether he be painter or sculptor, ought to be a great designer, and know how to reduce in proportion and form the harmony of all the different parts of an object, be it in form, action or expression.—F. Goupil.

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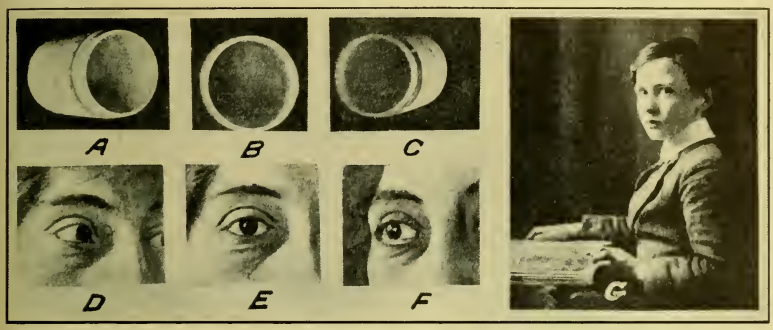
big advantage. He knows his sitters. He can get lifelike and pleasing surroundings. His sitters do not feel "strange" with him as they did with the professional. Plenty of time can be devoted to the work. If we do not get what we want at first, we can try again, and so forth.



All this points to two small bits of advice in connection with portraiture. First, if you are quite a beginner, do not start off with portraits. Be content to get your hand in, as it were, with some non-living object, e. g., a very simple little view or landscape, a cottage, not too near, etc. Let it be simple, and do it over and over again until you have got a good negative which gives a good print. Second, if you are not quite a beginner and have perhaps already tried portraiture, and again "perhaps" not been very successful, do not let failure dishearten you. Portraiture with a camera is a very big job, and is not exhausted with a dozen plates. It means long and careful study, but there are no difficulties which patience and care cannot overcome. Furthermore it abounds with countless very interesting problems.

In the portrait G, is reproduced an example of a problem which crops up frequently. The original photograph is a very creditable bit of work and shows considerable promise. It also offers one or two general hints which are worth reference.

Presumably this boy is seated facing a window, giving a rather strong frontlight. The right cheek in full light does not show quite enough light and shade variation or gradation. On the left cheek we pass rather suddenly from strong light to strong dark shade and shadow. These weak features indicate the need of some light-diffusing medium between the figure and window. For example, tissue paper, thin muslin, etc. This would have helped in two ways: by softening the at present over-strong directly incident light, and by diffusing or scattering light into the shaded or shadow parts, darkening the lights and lighting up the darks. Thus, contrary to the usual impression, this diffusing screen would have very little effect as regards length of exposure required.

Passing over the oft-discussed and quite important question as to whether it is not desirable to let the sitter look at the camera, we come to the problem part of the matter: Why do the eyes in certain portraits follow the spectator as he moves from one side to the other of the portrait? This so-called "following eye" is not often so well marked as it is in nearly life-size paintings, simply because most portrait photographs are considerably less than life-size. Apart from the size factor there is no difference, while for equal-sized examples the photograph usually has the advantage.

Now this "following eye" notion has been made something of a mystery. Curiously enough, the subject seeems to have been always overlooked or skipped in those books where we should expect to find it noticed and explained. For it is, in fact, a quite simple matter in essence, although not quite easy to put into unmistakable words.

Let us forget the eye for a moment and imagine that we are looking or pointing our lens straight along or into a cylindrical box, Figure B, where, however, the lens was not

quite as centrally placed as one could desire. But perhaps the reader will kindly imagine a better result. This would show a near and larger circle for the front edge, and a smaller concentrically placed circle for the far-end of the box. If we move our lens or observation point to the left, we get such a result as Figure A, or if we move to the right we get something like Figure C. Now this picture difference is due to our moving viewpoint as we look at a real solid object in relief, one having height, width and depth; that is to say, an object having three dimensions in space. Next, we observe that in the three pictures, A, B and C, there is not very much difference among them as regards the height and width of the front circular opening, these parts being all pretty nearly the same distance from us, a flat-facing plane. But the chief difference is due to the object having depth, front to back. Now let us set the pictures A, B, C, flat up against a wall, and view them as we walk past them. These flat two-dimension pictures do not show any such change as we had when moving right and left in front of the real article, a cylindrical box, in three dimensions.

Here, then, comes out the secret of the whole thing, the key-note of the so-called mystery, viz., that in a picture we have height and width only, no depth front to back. So that a change of viewpoint right to left, up or down, shows us always the same thing, the various parts of the paper or canvas do not change their relative positions as do the different depths of a solid object. Take the case of Figure B, ignoring A and C for the moment. As we view this from the right or left, it is practically just the same. So that what we see in any one position we may reasonably expect to see from any other viewpoint. Suppose for a moment we are in the central position, and that it represents a gun pointed directly at it, it will do the same if we change our position, we shall see the same picture always. Similarly the "gun" in Figure A seems to be pointed over our right shoulder, however we view it.

Now let us apply this to a picture of any size. In Figure E we have a front view of the face with the eye looking straight towards us. If we view this picture, either from the right or left, the eye still seems to be looking straight at us, just as though the person had turned the face in accordance with our right or left change of position. But had the head itself remained fixed, and we moved our camera to the left or right, we should have got some such results as Figures D or F. We thus again see the necessary difference between viewing a flat-plane two-dimension thing like a picture, and viewing a solid object in relief having also a third (depth) dimension. In brief, then, a flat object is the same from whatever point we view it, while an object "in the round", as artists put it, i. e., in relief, solid or in three dimensions, is not the same when we change our position. So that if the eye looks at us, i. e., at the lens, in one position, we have the "following eye" effect. The same thing, of course, applies to the magic boat idea, a boat which appears to be moving directly towards or away from us, and thus at times may seem to twist round as we view it from different viewpoints.

Now a hint or two for those who desire to make a few experiments in this connection. If it be desired to emphasize the "following eye" idea, it will help if such a position of figure, head and eye be chosen as suggests the idea of looking at us.

Thus, in the case of the portrait here shown, the body we view sideways, the turn of the head and further turn of the eye both greatly help the suggestion that the person is looking at or towards us. We may study these factors singly by covering up first one and then another part of the picture. In this case the half right-angle turn of the head and similar further turn of the eyes show the effect at almost its extreme. But in picture-making such a marked turn of the eyeball is a little too suggestive of eye strain. Another curious comparable effect may be obtained by tilting the sitter's head slightly backwards, when the eyes look at the lens. Such a picture held well up above head level still seems to be looking downward at us.

Finally, if the sitter looks at the lens, the picture will likewise look at the lens, from the other side of it, and thus if the lens-to-plate distance be not too short, we get the most striking effect when viewing the result at or about this lens-to-plate distance. —*Amateur Photographer.*

Diffused Light

Light as used by the photographer may be broadly divided into two classes, direct and diffused. In the case of daylight these are exemplified by direct sunshine and by the light reflected by clouds, and in that of artificial light by the rays proceeding from an unscreened electric arc and those reflected from the same light by a white screen, the arc itself being invisible from the position of the subject. We are all familiar with the effect of these two lightings in portraiture, the direct sunlight giving the harsh lighting so often seen in snapshot portraits, while the reflected light gives a more or less soft illumination, according to the degree of diffusion and the skill with which the light is manipulated. Between these two extremes there are many grades. Even the light from a white cloud will give what a photographer calls "over-lighting" if some further diffusing arrangement is not employed, and many portraits are spoiled for this reason. Hence we have the predilection of many operators for a studio glazed with groundglass, or having the glass covered with waxed paper. Where direct sunlight falls upon the glass during working hours this is necessary, but movable screens covered with tracing paper, as employed by the late Valentine Blanchard, who successfully worked in a studio with a southern aspect, are much to be preferred. In dull weather, and at such times as the sun is not shining directly upon the glass, they may be removed, the exposure shortened, and more vigorous effects obtained.

Many inexperienced photographers fall into the error of thinking that harsh lighting may be remedied by using a reflector to illuminate the shadow side of the sitter, oblivious of the fact that it is not so much that the shadows are receiving too little light, but that the high-lights are receiving too much. A simple experiment will show if the illumination is sufficiently soft for ordinary portrait work. If we set up a rod, say, an ordinary walking-stick, about a foot in front of a white background and find that it casts a more or less clearly defined shadow, it is a proof that the lighting is too concentrated. Such a light will cast a shadow of the nose upon the sitter's cheek, and probably show sharp shadows in the drapery. We must now either introduce further diffusion by means of a translucent screen, such as the ordinary circular head screen, or move the rod and background further from the light until the shadow is almost lost. It is usually in small studios that harsh lighting is most in evidence, as in them there is little space for moving the sitter. Hence, in such places the head screen is the only remedy. The tyro is often reluctant to do this, because he fears that such a reduction of light will entail a greatly increased exposure, but upon trial this will not be found the case. Anyhow, we must give enough exposure to yield the necessary detail in the shadows; and as these are illuminated by reflected light from a white screen or the walls of the studio, it will be found that little more exposure is necessary for this, while we can afford to give more prolonged development without causing the high-lights to be blocked up. Skilful artists can do wonders with concentrated light, but the tyro will find the course we recommend a safe one.

It is often found that an operator who can do good work in a daylight studio fails when he attempts to use electric light, and he is apt to attribute his poor results to the nature of the illuminant rather than to his own want of knowledge of it. Taking as an example of concentrated light a single enclosed arc lamp, we shall find that when used without a screen, we have sharp, clearly defined shadows. If we interpose a thickness of tracing paper near the lamp we shall still obtain decided shadows, but the outlines will be softer. If we introduce a head screen covered with thin muslin or tracing cloth the shadows will be soft and their outlines indefinite, while we are able to develop all shadow detail without losing the modeling in the lights. It should be noted that the nearer the head screen is brought to the sitter the more the intensity of the high-lights is reduced. In fact, it is possible to equalize the lighting on both sides of the face if desired. It must not be forgotten that a reflector must receive light before it can reflect it, so that the diffuser must not be placed so that it prevents light reaching it. Another useful method of securing a soft lighting with such a lamp is to place a white screen behind it, and to cut off all direct light by means of a saucer-shaped enamel reflector placed so as to cover the arc. It may be well to mention that the

open arc is also capable of being used in this way, as well as in the familiar umbrella shaped reflector. One important factor in lighting is that of distance. Even with reflected light alone it is possible to obtain cast shadows, and the remedy for these is either to place the sitter farther from the light or to interpose a diffusing screen.

Half-watt lamps form a class of their own, although to a certain extent they may be placed with arc lamps. A single high-power half-watt bulb requires treatment similar to an enclosed arc. It may be used either with diffusing screens, or the light may be directed upon a white screen by means of a hemispherical reflector. The great advantage of the half-watt system is to be found in the fact that a number of small lamps may be used, thus providing a large area of illumination without having to waste light through thick diffusers. Even half-watts, however, should never be used without at least one translucent screen, the metal reflectors supplied not being large enough to give alone the necessary diffusion. Here, again, the factor of distance comes in. If the lamps are far enough from the sitter the small diffusers supplied with them are sufficient, but if the lamps are placed close up, hard lighting will result if no additional diffuser be used.—*British Journal of Photography.*

Controlled Pictorial Photography

The letters which appear week by week in the correspondence pages upon "Faking", give proof that the question exercises the minds of amateur photographers to a considerable degree. It is to be doubted, nevertheless, whether any reconciliation of divergent views is likely to result from this general airing of opinion. The correspondence may certainly do good in the way of broadening the outlook of some who religiously follow their craft of the camera with preconceived notions of what pure photography is and should be, but whilst argument remains simply a forcible expression of conviction it is not likely to lead anywhere. Should it, however, induce people to get outside their grooves of thought in order to consider the matter from another standpoint, then there is hope for the discussion.

If this scientific photography is applied to picture-making it may, and does under certain conditions, provide beautiful pictures. But there is one thing about such pictures which does not please a certain class of mind. The mind that is given to particularization delights in them. The mind that has a habit of generalization, on the other hand, finds them wanting in a certain indefinable character of homogeneity. To such they lack the broad simple message of the scene—a message which comes not from the various objects themselves separately, but from the combination of all the objects, together with the atmosphere, the lighting, and the mood of the conditions. In other words, the spirit, rather than the matter of a scene. This is, in fact, the human vision version. Its beauty consists of its being the outcome of temperamental modifications, for every beholder sees it in his own way. Such a picture pleases the person who recognizes in it some past experience of feeling, and it can therefore claim to be artistic. It may represent things, as things, imperfectly; but if it gives their import—their significance in the grand result—no more is required in this direction.

The scientific attitude of mind bespeaks a delight in the exact portrayal of myriads of minor truths, secured at the expense of the more vague and larger truths of generalization. In such a version, the lens and plate between them overcome the very factors which in the artistic version make for generalization; exhaustive representation of form and of local color values being the result. They achieve every detail in every part of the scene. They pierce mist, vanquish shade, annihilate distance. The result is marvelous! But the man of feeling does not want it.

What the artistic photographer wants is that airy, suggestive view which is what his own eyes give him under the influence of passing impulses, not what his eyes give him when he screws up his senses to searching scrutiny.

He has, if he can, to modify the scientific processes of his lens, plate, or print, so that the result shall approximate to the view of his eyes which apprehends the scene with that "feeling" induced by a mood of the mind. If he can do that—few can with perfect success—he has produced a photograph of feeling which can claim to be called artistic.—A. W. Burgess in *Amateur Photographer.*

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Latitude In Gaslight Paper

Too many workers are inclined to think that because the emulsion on our gaslight paper has much in common with that on our plates and film, it has the same great latitude of exposure. This is far from being the right idea. When we expose a plate or film on an average view, there is included a much longer scale of tones than the emulsion can record, a scale ranging from perhaps a sky that is itself a source of illumination, to shadows that would require several seconds exposure for full detail. Consequently, an exposure of any duration is to some extent a compromise, and that is where we get the so-called latitude. A short exposure gives dark shadows, while a long exposure tends to block up the lighter portions, perhaps even give reversal in the sky. In between these two extremes is a wide limit in which a satisfactory negative will result. But let us take our camera to a somewhat elevated point and train the lens on a birdseye view, one in which there is no sky and no deep shadows by reason of the intervening atmosphere, and we will find that the latitude of exposure is decidedly small. The subject having more the character of the negative behind which we expose our sheet of gaslight paper in making a print, namely, a scale that is short, a scale that is entirely covered by the range of gradation of the emulsion on the plate or film. And this is where the explanation comes in. Our gaslight paper may have the same latitude as our plates and films, but the negative behind which it is printed does not have the long scale of the average lens subject and therefore the allowable variation in exposure is not as great. Use a plate or film behind the negative in the printing frame instead of the gaslight paper, and you will find that while the exposure is, of course, much shorter, the allowable latitude is proportionally no greater than in the case of the paper. If anything, the paper has the advantage of being more amenable to a "stop" bath, but employing this last as a remedy for over-exposure of the print is not conducive to good results.

Sulphur Compounds In Fixing

An Illinois correspondent has been reading some old books on photography and finds much condemnation of the use of an acid in the fixing bath for prints, the claim being that sulphur is set free and in combination with the silver forms an unstable image. This was all very well in the days of chloride and collodion papers, but these were toned and not developed, as are the present day prints. Hypo contains sulphur and when an acid is mixed with it a certain amount of the sulphur is set free, producing the milky effect we so often encounter. Our silver, in our plates and paper, is, to all effects, metallic silver, and any sulphur set free combines with it to form sulphide of silver which is rather unstable if it forms any part of the image. But, in the case of our developing paper, in the fixing process the hypo dissolves out the undeveloped silver haloids, and it is with these, rather than with the metallic silver of the image, that the sulphur combines, so that little or no ill effect is produced.

White Paper and High-Lights

Why is it that the average amateur is satisfied with, even demands, high-lights that are nothing more or less than white paper, in his prints? If you are not one of these "average amateurs" and a little doubtful as to the matter, ask the nearest amateur finisher and satisfy yourself on the point. You will then join us in asking why they do it. The amateur finisher cannot tell you; all he knows is that they want what they are pleased to call "snap". To get it, he resorts to full, if not over, development, or the use of a "hard" paper; at least, when the negatives have not already been made just the right kind for the purpose, by the

too-short exposure that the average amateur is so persistent in giving. But if you are, perchance, one of these admirers of "snap" in the photographic print, try and convince yourself of the error of your ways. Go out and look at the scenes about you and ask yourself just what there is to be found that is as white as the white paper of your print. Even this white paper itself is not white to the eye, except at very close range, by reason of the intervening atmosphere. One might, in a day's search, come upon something so white that it could only be properly rendered by an area of white paper, but such would have to be a newly painted or whitewashed surface, not too far from the lens, and so situated as to receive the full force of a good light. Such a surface, or something of a similar nature might be best rendered by white paper, but even such should not be allowed to occupy more than a fractional part of the picture space. Examine a collection of paintings and see how little white is employed. Take our most popular illustrative process today, the halftone, with which our books and magazines abound, and you will find no indulgence in white paper high-lights, for the simple reason that the dot on which the process is based, must cover the entire picture space. And while these illustrations are perfectly satisfactory, our average amateur must have his quality of "snap", as he designates it. What is the reason?

What Is An Exposure Meter?

One of our Illinois correspondents writes to ask us why there is such a lack of uniformity in the exposure time advised by the various tables and devices on the market. Taking five of the well known ones, he finds that for an average landscape in the best light at noon in July, using Eastman N. C. film and stop 16, Wellcome's Calculator advises one-twelfth second, while Harvey's Meter says one-fortieth, with the others in between and all different. At noon in January, all other conditions the same, the latter advises one-twentieth second and Six-Fax one-fourth. A portrait in the shade under the last named conditions demands one-third second according to Wellcome's Calculator and four seconds according to Six-Fax. An average landscape on a very dark day at noon in July calls for one-fifth second on the *American Photography's* Tables, and one second by the tables of *Photo Era*. Our correspondent wants to know if it would not be a good idea for him to get up an exposure table of his own taking the mean or average of all the various times suggested by the tables and meters mentioned, or would it be better to include a few others in order to make the average more trustworthy, or again, would it be better in making up his own table from these various readings to eliminate the ones having the widest variations and use only the ones that had some degree of accord. In the four supposed cases mentioned above, and in four others he found a variation of one to four between some two of the five devices mentioned. Obviously they cannot all be right; and, quite as obviously, they do not, any one of them, err in the same direction, when they do vary from the others. The answer is too much for us. I think our correspondent would be quite safe in taking the mean of the several he has mentioned, first being quite sure that he does not introduce any decided error through wrong interpretation of the sometimes rather brief description of the various subjects. What one table describes as "very dark, overcast", may be described in somewhat different words in another, and even somewhat similar wording on two different tables may be intended to convey ideas of a much greater difference. Aside from an actual test of the light reflected from the subject in the direction of the lens, some part of the determination must be influenced by the personal equation, by the estimation placed upon the value of the factors that the several tables and meters are compelled to consider. Several men might be able to estimate the lumber that could be cut from a certain area of timber by their individual calculations, based on their individual estimation of the value of a number of conditions having their bearing thereon, and all come quite close to the actual amount of lumber. But, comparison would show that there was more or less variation in such individual valuation placed upon different factors. About the best our correspondent can do is to give up trying to harmonize the several tables and meters and bend his efforts to harmonizing his own estimation of the various factors with that intended by the one meter or table he selects as best suited to his purpose.

INTERNATIONAL PHOTOGRAPHIC ASSOCIATION

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NEW MEMBERS

4519—Mrs. Ivy Major, Box 522, Blue Mountain, Miss.
Various sizes and papers, of portraits; for a general exchange. High grade portraits only. Class 1.

4520—Abraham Ehrlich, 8718 19th Ave., Bath Beach, Brooklyn, N. Y.
Class 3.

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Class 2.

4522—Clarence Ostrom, 538 Freeman Ave., Kansas City, Kans.
3¼x5½ and 4x5, various papers, of Graflex speed subjects, sunsets and general subjects; for Western scenes, bathing girls, figure studies, draped and undraped; scenery and anything of general interest. Class 1.

4523—A. K. Mehl, 440 Old Fort Place, Fort Wayne, Ind.
2½x4¼ of landscapes and nature studies; for the same. Class 1.

4524—Frank M. Hinman, 338 North 15th St., Allentown, Pa.
3¼x5½, developing papers, of landscapes and scenery; for the same. Class 1.

4525—Miss Helen E. Miller, 1600 San Bruno Blvd., San Francisco, Cal.
Class 2.

4526—O. D. Mazzie, 55 South 51st St., Corona, Long Island, N. Y.
Class 3.

4527—John J. Lee, Box 856, Ashtabula Harbor, Ohio.
Any size up to 8x10, various papers, of general views, buildings, marine subjects and portraits; for any good subjects, especially marine and other scenery, bathing and figure studies. Class 1.

RENEWALS

4258—G. S. Wright, Tunnelton, Ind.
Will exchange post cards and smaller of miscellaneous views; for the same. Class 1.

CHANGES OF ADDRESS

3523—E. Wesley Lidaker, 1817 La Salle St., St. Louis, Mo.
(Was 1305 Armstrong Ave.)

3996—Paul M. Elder, Box 155, Spirit Lake, Idaho.
(Was Coeur d'Alene, Idaho.)

4379—Frank B. Howe, Union League Club, 2nd and Hill Sts., Los Angeles, Cal.
(Was 212 Mason Opera House.)

4447—G. W. Grant, 1911 8th St., Berkeley, Cal.
(Was Jamestown, Cal.)

4452—Wallace R. McBlain, 611 W. 16th St., Davenport, Iowa.
(Was Eldon, Iowa.)

4472—Harry E. Carpenter, 90 Willow St., Bridgeport, Conn.
(Was Fairfield, Conn.)

4481—J. E. Coffey, Warner, Okla.
(Was Mountain Park, Okla.)

4517—Russell Nakata, care Miss McGranagan, Park and Prospect St., Harrisburg, Pa.
(Was Altoona, Pa.)

WITHDRAWAL

4342—H. S. Albertson, Omak, Wash.
For lack of time.

CLUB NEWS AND NOTES

Club Secretaries and others will oblige by sending us reports for this Department

Chicago Camera Club

Much interest was displayed at a recent meeting, when L. D. Carter, a member with considerable bromoil experience, talked enthusiastically on this process. A number of members are now clamoring for further details and personal instruction. At the last meeting a talk and demonstration by Edward D. Waters on studio portraiture was both instructive and entertaining. His professional work is marked by artistic simplicity, combined with a force and naturalness that is gratifying.

The annual election of officers was recently held, resulting as follows: President, G. C. Abbott; vice-president, W. F. Wienecke; secretary, W. H. Klose, and treasurer, O. W. Bahl. Seven committees covering various activities were formed and appointed by the president. The club looks forward to an instructive and interesting year. Meetings are held every Wednesday evening at 616 South Michigan Avenue, and all visiting, out-of-town camera club members are cordially invited.

Illinois College of Photography

We are pleased to learn that Walter Krudup is doing well at the Holloway studio at Terre Haute, Indiana.

The many friends of Miss Katherine Collier, popularly known as "Sunny", class of 1914, will be glad to learn that she is not only succeeding admirably in her position at Everett, Washington, doing home portraiture, but she has put by her crutches, has done some dancing the past season and is now learning to swim. Miss Collier certainly deserves success, and she has our very best wishes and congratulations.

OUR BOOK SHELVES

"X-Rays"

The above is the very brief title of a very full presentation of the principles and practices that enter into the production of X-Ray negatives having photographic quality of a high order. As the Foreword explains, Roentgenographic technique and interpretation are assumed, the booklet seeking to instruct in the photographic process involved. The first two chapters deal with the photographic physics and apparatus involved, exposure and the use of the intensifying screen being given particular attention. Chapter three deals with the use of dental X-Ray film, chapter four with dark-room procedure. Developing procedure, developers and fixing baths, examination of negatives, intensification and reduction, and lantern slide making and copying taking up the remaining five divisions. The booklet is one that is informative in the highest degree, one that will be found of the greatest value by any Roentgenologist, being based upon careful investigations conducted in the X-Ray Laboratory of the Eastman Kodak Company. Any of our readers who are interested in this branch of photography should not fail to send for a copy, the firm advising that they will gladly send such to interested parties upon receipt of request. Address, Eastman Kodak Company, Rochester, New York.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

Bert Gatlif got the limit of deer this season.

Bert Hodson is still at it in Sacramento; busy as ever.

"Seventime" Valentine of Redding has been kept very busy all summer.

Frank Hennies has moved to the First National Bank Building in Eureka.

H. Sackrider and his two assistants are kept busy at his Marysville studio.

Ed. Seely of Arcata won several prizes at the fair held in that city during September.

Mr. Alexander, a former resident of Montana, will assist Mrs. Davis at Chico this fall.

J. G. Thompson, formerly of Gatlif & Thompson, Eureka, is doing a fine business in Chico.

Harvey Burnett is still making improvements around the Freeman Art Company's place in Eureka.

Harry Zink of Chico expects some good duck hunting this coming season. He knows the writer likes ducks.

Ruby Kolling has charge of the reception room at Hartsook's Santa Rosa studio. She is looking as handsome as ever.

Happy Miss Owens, the popular saleslady at the Ing & Allee store, is back at work after an enjoyable three weeks' vacation in San Francisco.

Saving Silver Waste

Silver waste is worth almost three times what it was a few years ago, and its recovery is simple and inexpensive. If you have not found it profitable in the past, consider present conditions. Silver is worth a dollar or more an ounce. It requires about three ounces of the commercial form of sulphide of soda to precipitate an ounce of silver; sulphide of soda answering equally as well as the more expensive sulphide of potash for this purpose.

Pour all of your discarded hypo solutions into barrels. When a barrel is full, add about one quart of a freshly prepared, saturated solution of sulphide of soda. Stir well and allow to stand for at least twenty-four hours. At the end of this time dip out a graduate full of the solution and add a small quantity of the sulphide solution. If the solution remains clear, all the silver has been precipitated. If a sediment forms, add more sulphide to the solution in the barrel.

It is important the barrels in which silver is being precipitated should be kept as far away from your work rooms as possible. The fumes from sodium sulphide are ruinous to sensitive photographic materials. Covering the barrels will help do away with the objectionable odor of the sulphide.

After all the silver has precipitated, pour off the clear solution, scrape out the sludge remaining in the bottom and place it in a sack, hanging this over the edge of the barrel until it has thoroughly drained. It should be as dry as possible before it is sent to the refiner.

To recover silver from paper waste it should be burned where there are no draughts, as the ashes contain the silver.

Wet sludge, which has been thoroughly drained, amounting to twenty-five pounds or more, can be profitably handled by the refiners, or if thoroughly dried by heat, half this weight. It is best, however, to ship as large a quantity as possible at one time.

Some photographers find it is not practical to recover silver in the studio or directly on their premises because other tenants object to the odor of sulphide. In such cases it is worth while to accumulate a barrel or two of old fixing solution and take it away from the studio for the precipitating process.

The following refineries will be glad to advise you, on request, as to the minimum quantities of waste they can profitably handle: Handy & Harman, Bridgeport, Conn.; T. B. Hagstoz & Son, Philadelphia, Pa.; Elizabethtown Smelting & Refining Co., Newark, N. J.;

Emil Schneider, Newark, N. J.; Philips & Jacobs, Philadelphia, Pa.; Irvington Smelting & Refining Co., Irvington, N. J.; Thomas J. Dee & Co., Chicago, Ill.; Spyco Smelting & Refining Co., Minneapolis, Minn., and Wildberg Bros., San Francisco, Cal.—*Studio Light.*

Sheet Mucilage

The way in which the two forms of sheet mucilage, in jars and in book form, are becoming common on the shelves of even the smaller dealers in photographic supplies, attests very strongly the popularity of this product with amateur and professional photographers. The dealers all report sales as increasing all the time, and we do not wonder at their doing so, as we have tried this form of adhesive and found it most convenient and satisfactory. Not only for fastening prints in albums, but for attaching slips carrying descriptive matter, for tipping in small prints in letters, and for a thousand and one other uses on one's desk that before involved the use of a mussy mucilage bottle and brush. If your own particular dealer does not happen to carry these goods, try and get him to do so. If that does not work, write direct to one of the firm's houses, sending the required twelve or thirty cents, the "by mail" price, for either a book of fifty ½x4 strips or a jar of five hundred half-length strips. Address simply, The Ticket & Tablet Company, Chicago, New York or San Francisco, whichever city is nearest to you.

The Los Angeles School

The Pacific School of Fine Arts Photography has been established at 3014 South Grand Avenue, Los Angeles, California, at a very opportune time, as photographers are facing many real problems arising from new conditions.

An imperative appeal is being sent out by the photographic profession for help to qualify at once. That women must help work out an answer to the new problems in this field is apparent, as five thousand photographers are now in the country's service, and the new registration will take many more.

The Pacific School of Fine Arts Photography has ideal equipment and up-to-date instructors. W. Grant Hess, a director and chief instructor, has been prominently identified with photographic progress for more than thirty years. The school's instruction is directed toward the most approved methods in the advance of the photographic profession.—*Los Angeles Express.*

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, for October 1, 1918, of CAMERA CRAFT, published monthly at San Francisco, State of California, County of San Francisco.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Fayette J. Clute, who, having been duly sworn according to law, deposes and says that he is the Editor of the CAMERA CRAFT and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

Publisher, Camera Craft Publishing Company, San Francisco, California; Editor, Fayette J. Clute, San Francisco, California; Managing Editor, Fayette J. Clute, San Francisco, California; Business Manager, Fayette J. Clute, San Francisco, California. That the owners are Camera Craft Publishing Company, San Francisco, California; Harriette E. Clute, Trustee, Hanford, California; Romaine F. Clute and Clifford H. Clute, Beneficiaries, Mountain View, California.

That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are none.

That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest, direct or indirect, in the said stock, bonds, or other securities than as so stated by him.

(Signed) FAYETTE J. CLUTE, Editor.

Sworn to and subscribed before me this twenty-seventh day of September, 1918.

SID J. PALMER, Notary Public, in and for the City and County of San Francisco, State of California. My commission expires December thirty-first, 1918.

XXV No. 12 DECEMBER, 1918 Price, 10 Cent

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CAMERA CRAFT

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Ansco Company

Binghamton, N. Y.

AN EASTER PORTRAIT
By JOHN PAUL EDWARDS
PITTSBURGH SALON

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

FAYETTE J. CLUTE, Editor

CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

VOL. XXV DECEMBER, 1918 No. 12

The Work of John Paul Edwards

By W. H. Rabe

Illustrated with Examples of Mr. Edwards' Work

EDITOR'S NOTE: *The attention of the reader is called to the fact that one of the illustrations accompanying this article is used as a frontispiece, while another appears on page 471.*

Once again the California Camera Club is favored with an exhibition par excellence, the work of a real artist with the camera; work that has its lesson of simplicity and strength, of artistic merit and technical excellence. The pictures shown include some that have just returned from exhibitions where they won the highest awards; all being examples that have been accorded honors in various salons. They are the perfection of landscape work, considered either as masterful compositions or examples of perfect technique.

Mr. Edwards is an enthusiast who has devoted the last few years to a careful study of art principles as applicable to photography, as well as the manipulative side of photography, as a medium of art expression; and to what good purpose can be judged by the following, from the pen of a London critic, concerning one of his pictures at the last salon: "A notable example, and one that exemplifies the right use of the soft-focus lens, is seen in the picture by John Paul Edwards of California, entitled, 'A Beach Frolic', a small print that might well be overlooked, a group of children running on a wide stretch of sunlit sand. Apart from the excellence of the composition and the rendering of motion that has been so well caught, the whole picture shimmers with light and atmosphere. Yet at the first glance the casual observer might describe the print as being fuzzy. A more careful inspection reveals the presence of the finest detail in the children and in the rest of the picture,

"SEA URCHINS" By JOHN PAUL EDWARDS

but all surrounded in an envelope of light referred to. One almost feels the warmth so well suggested and one knows that the sands over which the ripples are creeping are hot to the feet of the youngsters. This is a triumph for realism, for pictorial photography realism by suggestion. No purist of the sharp-focus, 'hard-as-nails' school could possibly produce anything half as good of the same subject."

Mr. Edwards, whose home is in Sacramento, being engaged in active business life, has found little opportunity for going far afield, but that has, apparently, in his finding in his own neighborhood, a wealth of beautiful and original compositions that less appreciative workers evidently have thought the locality did not afford. His chosen outfit is a 4x5 camera of the ordinary "view" type, fitted with a soft-focus lens. His method of working is to first select the place and subject and then bend his efforts to the securing of the proper atmosphere for the picture; early morning, evening shadows, enveloping mist, whatever effect may seem best fitted to the carrying out of the theme or motif of his picture. All his compositions are arranged on the groundglass at the time of taking; little or no trimming down is indulged in, and no hand-work or manipulation is employed on the negatives, which are developed in a tank. The only control he permits himself is the shading of certain portions, if thought necessary, during the process of enlarging. This last is all done on

THE BOATMAN By JOHN PAUL EDWARDS

Cyko and Artura Carbon Black, and the results achieved are the envy and wonder of even those who use the same medium. As his negatives are all fully timed and over-development is carefully avoided, these things may have more to do with the fine results secured in his prints, than any special method of work, further than his painstaking care.

Although landscapes are his favorite subjects, and those with which he has mainly won his high reputation, he seems equally at home in the genre and portrait class when such subjects are essayed. He is deeply interested in the advancement of pictorial photography, being one of our Coast represenatives of the Pictorial Photographers of America and an Honor Member of the Pittsburgh Salon, to both of which he contributes regularly. His latest achievement is the winning of two first prizes at the Liberty Fair Exhibition in Los Angeles. His present exhibition on the walls of the Camera Club is a noteworthy one, and I think the reader will agree with me in so saying, after inspecting the few examples, selected at random for their suitability for reproduction, that I am permitted to show herewith.

And having thus chosen our course without guile and with pure purpose, let us renew our trust in God, and go forward without fear and with manly hearts.—ABRAHAM LINCOLN.

An Indexing and Filing System

By F. K. Caswell

With Illustrations by the Author

When a large number of negatives are kept on file, especially where they are of varying sizes and in the form of both glass plates and film, with perhaps some subjects embracing whole sets of negatives that should be made easily located, the particular filing system employed becomes quite important. After trying several plans, I have adopted one which, after two years use, has proven so satisfactory that all my negatives have been renumbered to conform therewith.

First, a prefix number is assigned to each of the different sizes that are at all likely to be used, either in negatives or in prints, as follows:

A 1⅝x2½	F 3¼x4¼	K 4 x5	P .....5 x 7	U 7x11
B 2¼x2¾	G 3½x3½	L 3⅞x5½	Q .....5 x 8	V 8x10
C 2¼x3¼	H 2¼x7	M 4 x6	R 3½x12	W 10x12
D 2½x4¼	I 3½x5	N 4¼x6½	S 6½x 8½	X 11x14
E 3 x4	J 3¼x5½	O 4 x10	T .....7 x 9	Y 14x17

The letter Z is used to indicate glass plates. It will be noted that some of these sizes are not those used regularly for plates or paper, but are the result of halving some such regular size.

As soon as a negative is dried, it is assigned a number that classifies it, according to its subject, the prefix letter indicating its size being placed in front. For example, a 3A or post card film negative, my tenth one of the San Gabriel Mission, would be designated J-910, the series assigned to pictures of that subject being one that begins with 900. Were the negative on a glass plate instead of film, it would be marked ZJ-910. This would be written with a fine pen and India ink on the margin of the negative on the back or shiny side. In some cases I add detail concerning date, time, stop, lens, light and title, more or less complete, as seems desirable. This record does not show on the print, as it is covered by the printing mask. Titles across the foreground of a picture are rarely satisfactory, and they loom up too large in enlargements and have to be trimmed off.

Instead of indexing each negative, I use a key index, assigning one hundred numbers to each subject. A record print is made from each negative, the paper being numbered on the back with the negative number before printing. The print finished, the number is placed on the white margin of the front in small characters, using a crow quill pin. These record prints go into albums of the loose-leaf kind, easily made and very serviceable. The covers are heavy straw or binder's board, covered with leatherette, and the leaves are one-fourth of

THE BEACH IN THE COVE By JOHN PAUL EDWARDS

the 22x28 size in which the brown, gray and black paper for sub-mounting comes. An ordinary letter-file punch perforates them with four holes along one end, a stronger punch cuts corresponding holes in the covers, and a good quality of shoe-strings completes the binding. With these, one can add new leaves at will, as the negatives of any given class of subjects increase in number and any desired separation of individual groups of hundreds can be made. These record prints are mounted in these albums in as approximately numerical order as their varying size will permit without waste of space, of course avoiding any mixing of different hundred series. All the prints in any given hundred being of the same general subject, and each print bearing its negative number on its white margin, the albums furnish a quick method of identifying any

particular negative. The front of each album or binder carries a key index, a copy of which also hangs over the work bench, made up, in my own case, somewhat as follows:

ASSIGNMENT OF NEGATIVE NUMBERS

Series Nos. (Hundreds)	Size as Designated by Letters				
	A	C	J	P	V
1- 99	Cats	Cats	Cats	Cats	Our House
100-199	Portraits	Ships	Ships	Ships	Ships
200-299	Locomotives			Big Trees	Big Trees
300-399	Local Views		Pasadena	Mt. Lowe	Portraits
400-499	Denver Trip	Dogs	Denver Trip	Dogs	Dogs

And so on, running the numbers as high as necessary, as numbers do not cost anything. It is perhaps better to leave number blank in a size in which there are no negatives, if there are more than one other size. If a particular subject is the same hundred numbers in all the sizes in which negatives of that subject are made, one quickly memorizes the number for that subject. In my own case I know without looking that all my San Gabriel negatives are in the nine hundred series.

I file all my small film negatives in a card indexed tray or cabinet, placing a guide card in front of each ten. The large films and the glass plate negatives are put in negative envelopes and filed in empty plate boxes, marking the numbers on the outer edge of the box so that they can be plainly seen as the boxes stand on the shelf. This makes the locating of any negative a very simple matter after its number has been looked up on the proper print in the album or file indicated by the key index. It is, in fact, but a few minutes work to locate and get together for printing quite a number of assorted subjects as selected from the record album, and it is but a moment's work to find any particular picture by referring to the key index and then to the album, although one rarely finds himself under the necessity of referring to the former.

All prints sent out are marked on the back with their negative numbers; and, in the case of enlargements, the proper letter is added to indicate the size of the enlargement. For example, an 8x10 enlargement would be numbered VP-709, instead of P-709, as would be the case were it a contact print from the 5x7 negative that the P indicates, the V designating the 8x10 size. A 5x7 enlargement from glass plate negative number CZ-428 would be marked PCZ-428. Sometimes a contact print or an enlargement is made from some selected portion of a negative. Where negatives offer this possibility the best way is to make the one or more available separate record prints and give them supplementary subletters A, B, C, etc. Then, for example, an 8x10 enlargement from a selected portion of negative P-574, the number marked on the back would read EP-574-A, while another enlargement of the same size, but from a different section of the same negative would be marked EP-574-B, and so on, were other selected portions used. Contact prints from these selected portions would be marked in the same way, except that the first letter of the number would indicate the actual size, instead of the letter P used to indicate the size of the enlargement. Where a reduction is made from a negative, the size letter is placed first, just as in the

LIVE OAK CATHEDRAL—NEAR WHEELER'S HOT SPRINGS

case of an enlargement, but the fact that there is no sub-letter at the end of the number indicates clearly that the print being smaller than the negative is due to its being a reduced print, instead of a smaller print made from some section of the negative.

AT MISSION SAN JUAN CAPISTRANO

This may all seem quite complicated in the reading, but in actual use it will be found exceedingly simple. One can make it still more simple by not using any given hundred numbers for more than one subject, even though they be of different sizes. Of course, the table of assignment of negative numbers that I have given is merely illustrative. Anyone using this system has only to assign a hundred numbers to each group of subjects, no matter how many subjects his photographic activity may include. If he has sixty-two subjects and works upon a new one, these last would be numbered in the 6300 class. In case one accumulates more than one hundred negatives of any one class of subjects, he has but to assign a new hundred, the next hundred vacant. For example, Yosemite views in series 700 became larger than the hundred numbers would accommodate, by reason of a repeated trip there, the new negatives would be assigned the next vacant hundred; which, just at this moment happens to be 2700.

My reason for finding so much satisfaction in this system lies in the fact that I make a great many small enlargements and send them away, with the necessity of recording, in the simplest way possible, just what has gone forward in each individual case. This system permits of my doing this in the most expeditious manner. Brief as are the figures indicating the pictures sent, they tell me the size sent, whether contact print or enlargement, whether from a part or the whole of the negative, from just what negative, what the size of the negative is, and whether it is a film or glass plate one. It also enables me to turn immediately to the proper album and find a print from the negative and thus identify it fully. And furthermore, if a duplicate is wanted, the party has but to give me the number on the back of the print and I know at once what is wanted, and right where to lay my hand on the required negative. Once one's negatives are put in order and numbered according to this system, the proper indexing and numbering of the new ones, as made, becomes a very simple matter, and a matter of but a few minutes time with each new batch. The time often wasted in looking for one negative where no system is used is enough to permit of the numbering and recording of several hundred. So the sooner one gets his negatives numbered and indexed, the more time he will save, to say nothing of annoyance and vexation avoided.

The Kodak Picture from Home

By Mary L. Stephenson

The khaki-colored tents and the Missouri mule betrayed the presence of an American company encamped along a certain river front in Northern France. Dusk was coming on and the boys had finished their evening mess. "——What's the matter with Bob today?" asked one of his mess-mates. "He's got something on his mind. He always has when he just sits and smokes and looks far off like that."

"It's just plain homesickness, that's all", answered the "Bantam", as he had been nicknamed by the fellows in his company. "You see", he went on, "there's a new kid back home—born only six weeks ago—and when those bullets at Chateau-Thierry came whizzing by, Bob said to me, one day, he didn't mind dying, but he hated to go without seeing his boy. It gets him sometimes, but he'll be all right when he gets back into the fighting."

"Come on, fellows, here's the mail", was the sudden interruption, "its just been sent over."

Soon an eager, excited bunch were grabbing at letters and papers and packages. Robert Lyndon puffed harder and harder as the pile grew thinner and thinner and his name had not been read. "Here's a piece of second class matter for you, Bob, looks like a picture or something", came from the self-appointed sorter of the mail.

Bob tried to appear indifferent, as he took the parcel and slowly turned away to open it. His hand trembled, however, before he had torn off the last bit of paper—for there, looking straight into his eyes, was his wife's picture. It was taken on the stoop of their little bungalow out West and held close in her arms was the little fellow whom Bob had never seen. Underneath the picture was written: "Mrs. Robert Lyndon and Master Robert Lyndon, Jr.—Compliments of the ——— Chapter of the American Red Cross."

The boys should not see him cry. And so, this man who had so fearlessly faced the bullets of the Hun only a few weeks before, slipped away and stole out in the deepening dusk to be alone with those dear ones at home.

His heart throbbed with thankfulness for the American Red Cross to whose thoughtful interest he owed this first glimpse of his first-born. How proudly he showed it next day to all the boys and how quickly his spirits returned. That assurance that all was well with them, which was the message the picture brought him, had satisfied him and brought back all his fighting pep. Better than the written story was that small kodak picture. He couldn't wait to get back into the front line. His one desire was to finish with the Hun and help make a safer world for his boy.

Every Chapter of the American Red Cross is organizing its pictorial department to carry on this work of sending pictures of their families to the soldiers

"over there". Volunteer photographers are wanted for this work and should register with their local chapter. Such personal touches are of infinite value. This manner of showing friendship and good will is greatly appreciated by the soldiers, and the visible assurance of the welfare of their families does much to boost the fighting morale.

Movies, too, are now being taken for Pershing's men overseas. In New York's parks the families of soldiers have been invited to pass before the camera, and by means of their waiving hands and laughing faces, a message of cheer is carried to their fighting sons and brothers and husbands. Under the American flag were posed recently representatives from many nations united in the one thought of the welfare of their soldier boys at the front.

The Red Cross Christmas Roll Call will give the people of America an opportunity to stand behind the man who stands behind the camera. This annual call to membership in the American Red Cross invites re-consecration to that spirit of service and sacrifice. Every citizen of America, whether he is living at home or abroad, is invited to enroll during the week of December the sixteenth to the twenty-third, and to wear a Red Cross button as a symbol of service rendered.

Everyone who visits the movies knows what a part the movie camera has played in this war. It has brought home an actual visualization of the work behind the lines, as well as of the actual fighting. A film, called "The Historic Fourth of July in Paris, 1918", shows the victorious troops of the Marne, fresh from their conquest of Chateau-Thierry, Vaux and Belleau Wood. It showed also the procession of Red Cross nurses and the way all Paris flung bouquets at their feet, as well as to those tall, wiry, marching heroes.

"Soothing the Heart of Italy", is the title of a new film picturing conditions there and showing how the American Red Cross came to staunch Italy's wounds.

Still another part now being played by the camera, and a very important one, is the picture made of the soldiers themselves to send and bring back home to the families on this side.

In one of the Rest Houses in Italy, it is a special part of the service rendered there, that in addition to giving financial assistance and food to needy soldiers, their photographs are taken to be sent later to them or to their families. The camera is also serving to record and testify against the barbarous inhumanities of this foe which unless seen pictured, seems incredible.

There are two things the soldiers always carry with them; photographs of the "home folks" and letters from the "home folks". The pictures, often with a small Testament, are always in that breast pocket over the heart. I think they sometimes are put there as a kind of charm to ward off bullets. Anyway, that's where they always are. And the look in a man's face when he shows you the picture of his mother, his wife, his children, and you say—as you always do—they are very beautiful, will bring tears to your own eyes.—Charles W. Whitehair, in *American Magazine.*

Aeroplanes and Clouds

By Latimer J. Wilson

With Illustrations by the Author

Only photographers enlisted in the service of the Government have the privilege, during the period of the war, of making photographs from an aeroplane. The marvellous effects of sunlight above the clouds, as recorded by the aerial photographer, furnish the layman a glimpse into a strange and unfamiliar realm.

From the summit of a lofty mountain, the peculiar conditions of light, as viewed by the aviator, can be obtained. To a certain extent, the same effects can be witnessed from the top of a high hill during the early hours of the day, when dense clouds of fog are drifting over the hidden valleys. It is then possible for almost anyone to obtain photographs of clouds lighted by the slanting rays of sunrise.

But ordinary cloud negatives exhibiting the various types of cloud formation can be utilized by the clever "ground photographer" to create pictures that will produce the same effect as those obtained from the aviator's viewpoint. All the charm of aeroplane photography can be expressed in a combination of a landscape and a suitable cloud negative, naively printed together. Perhaps, in the near future, it will be possible for the amateur to travel through the air and make his photographs when magnificent views inspire him. But until

A DIP OUT OF THE CLOUDS

THE AIR ROUTE IS AN OPEN ONE

such a day, there is no need of his depriving himself of the pleasure of producing these pictures, if he so desires.

If one already possesses cloud negatives such as are usually obtained with ray filters, or with small lens stops when the clouds were silhouetted against the light, he has the first requisite for synthetic aeroplane photography at hand. Such negatives should be fairly thin but full of contrast, with the blue sky represented by almost transparent areas, while the white cloud portions are fairly dense.

Aeroplanes are not, at present, uncommon throughout the country; and, to obtain what is wanted to combine with the cloud picture a silhouette of one can be taken against any kind of a sky, if the exposure is made with a small stop and a shutter speed that will produce a sharp image. If the resultant negative be placed with its film side in contact with that of a suitable cloud negative, the two can be enlarged from directly, or they can be printed separately, as in ordinary double printing. If one cannot obtain an aeroplane negative from a suitable machine, one can be produced by cutting a reproduction from some magazine, mounting it upon a sheet of white cardboard, and copying. The resulting negative will show the machine in silhouette with a sufficiently thin background to permit of the double printing. Either contact prints or enlargements can be made in this manner with very pleasing results.

If one is fortunate enough to possess some negatives of distant landscapes obtained from the summit of a hill or other elevation, these can be effectively util-

ized in combination with the aeroplane or the cloud negative. As a photographic diversion in which artistic results are possible, this method of "faking" is not unworthy of one's effort.

Making "Salon Stuff"

By Richard J. Grace

With Illustrations by the Author

"Art because artful."

A year ago Tom and I stood amazed in a certain salon. It had been advertised as a photographic salon, and we had innocently contributed a picture apiece. Three days before the salon opened, our works of art came back. Tom got a stereotyped and formal notice and I was honored by a two-page personal letter from the chairman. My picture was "very interesting photographically, but not quite the thing pictorially. May we ask you to try again. We have enclosed a catalogue, in which the prize-winners are reproduced. If you will attend the exhibition, we feel that, with your artistic training, you will appreciate that which it is hard to express in writing." Very kind and considerate, and well meant; and I wrote my appreciation of the courtesy.

But that salon, the next week, was the weirdest exhibit we ever attended. The first prize (Across My Heart) was a badly out-of-drawing, soft-focus rendering of the left-hind wheel of a "tin Lizzie". The second prize was of a whitewashed picket fence, badly in need of repair. This is really true, and a matter of record and common knowledge. But the worst was this; there was not a photograph in the whole exhibit. They were all disguised, and camouflaged as charcoal drawings, pastels, crayon sketches, and horribly thumbed pencil drawings. The only paper they forgot to use was sandpaper. By the time we made one round and left, Tom was sputtering and profane, and wanted to know how they did "it". There were no cameras, plates or papers that I knew of that would be guilty of such work.

When I reached home, I lit a pipe and kicked the fireplace into action, searched for and found a pamphlet in the bookcase and sank into one of those chairs that seem to fold themselves around you. The pamphlet was heavy reading and required much study. I obtained it in the following manner: Up to August, 1914, we had a fellow hanging around, whose nickname was "Count", on account of his nationality and no-account proclivities. He was artistic, his carelessness with money, his appearance and his morals, all attested to this. He disappeared, leaving me a note bequeathing me his books, and stating that he was bound for the front, but making no mention of the money he owed me. This pamphlet, which I oddly remembered on my way home,

was one of his. It was written by Professor Otto B. Schott, Kaiserliches und Koenigliche's Instructor, etc., in collaboration with Fraulein Lotta Bosch, the eminent and, according to her photograph, rotund pictorialist. It was entitled "Photographischekunstlermaleri," which, when separated and disinfected, makes it a treatise on the art of making artistic photographs. The pamphlet was an odd size, about ten inches square, this probably being done so they could get the title on one line. I finished it that night and then destroyed the evidence in the fireplace.

The next night I set out to produce a masterpiece. Bearing in mind that I must eliminate all "disturbing detail", I finally picked on a vest-pocket negative that was slightly out of focus, to serve as my "crude original", as per directions. And it was crude in many ways. It was a picture of a totem pole in the "bad lands", somewhere in Alaska, with "Liverpool Liz's" place on one side of the walk, and Sam Wah's laundry on the other. It certainly was crude if anything ever was. I made a straight print of the inartistic thing, and then a transparency of it, losing more detail and obtaining more contrast, as advised by the professor and the fraulein. This transparency I then put in the enlarging lantern, focusing upon a 11x14 piece of thin bromide paper, and soon had a paper negative with still less detail and contrast.

ROUGH, CRUDE ORIGINAL

This was dry the next evening, and I had my chance to use my "artistic training". Let me see; I was to produce "atmosphere, depth, feeling and technic". Some job, with a piece of bromide for a basis. As I was somewhat rattled, I produced a lot of the above unintentionally by printing my first proof wrong side to. I suppose the thickness of the paper added "depth". However, tyro that I was, I could see that sunlight was inconsistent with art, as laid down by the precious pair of instructors; there must be a gloomy Prussian atmosphere, a certain "Katzenjammerdammerung" chiaroscuro. The laborious handwork and numerous proofs specified, sounded

too laborious, so sneaking into the library, I hooked the sand eraser from the typewriter, and with full arm sweeps and an artistic feeling in my cramped fingers, removed large patches of sunlight,—and more detail, from my paper negative. A proof proved a revelation. It had been a nice day, but now a storm was coming up the Katalla, and it was so realistic, I shivered and congratulated myself on the four cords of wood in the shed. Coming to, I realized where some improvement could be made, and added so much atmosphere that the totem pole, my "motif" was lost. This cost me a full hour, as I had to work it back in by hand.

A week later I showed the results of my efforts to the "chairman"; he was delighted, and it got a "mention" for me this year. I am going to use shoe polish next year and get a "First". It was quite a triumph; but it causes me an occasional uncomfortable feeling. When people say to me: "Your photograph?" referring to it, I feel as if I had been indicted. Is it a photograph? Is that tortured and rubbed nightmare a picture? Is it anything but a hybrid of my old student, charcoal days, much less the product of an innocent and unoffending chemical process? Is it art, or artfulness; and is it worth the while of a normally sane and sensible human who likes a pipe, and dogs, and children, and who has had one wife for fifteen years and is still in love with her? And Tom will hardly speak to me; while the long-haired men and the short-haired girls gush over me. Last night the negative of the "Mention" followed the pamphlet up the flue, and by way of reparation, I retired to the darkroom and made those twelve 5x7 prints of "Baby Crimson Rambler" that her mother has been pestering me for. "Ars longa, Tempus Fugit", and while the "tempus" fuges, I am going to forget art and be happy with my photographs and my friends.

"ALASKA" HONORABLE MENTION
AN ARTISTIC SUCCESS

There are two kinds of discontent in this world: The discontent that works, and the discontent that wrings its hands. The first gets what it wants, and the second loses what it has. There's no cure for the first but success; and there's no cure at all for the second.—Gorgon Graham in *The Optimist.*

Why a Photographic Business Goes Wrong

By W. Clement Moore

The howl of the man who has made many failures and continues to make them, is as disagreeable as the whine of a dog on a windy night. What's the use? Take the commonsense view of it, and consider just how much extra business a man is going to get if he spends his time talking hard times. It is surely not an attractive subject and cannot result in a business boom.

Every photographer ought to be optimistic during business hours especially, and then after business he ought to be optimistic until bedtime for the sake of his family and those around him. It takes nerve to do this, I know, especially if business is not as good as it ought to be; but then, nerve is a necessity for the man who would win success.

A lack of faith has caused many failures. Men with perfectly good ideas and exceptional ability as photographers, have failed because they were business cowards. They dare not invest in good advertising, distribute their circulars or pay the price of attractive signs, because they were afraid that the cost would not be immediately returned to them. They do not stop to consider whether it is better to spend twenty-five dollars in advertising or twenty-five dollars in idleness, for idleness is quite as expensive as anything. As a rule, these same people are voluminous in their praise of their photographic work when they meet a patron face to face and have a chance to talk about their work—well, say, if you think it worth while to talk to one person a day about your work in your studio, wouldn't it be much wiser to put your talk on paper, either in a newspaper or on circulars, and thus talk to not one, but thousands. If you have any hope of inducing a possible patron to patronize your studio when you meet him personally, why shouldn't the same line of talk convince hundreds of others who have not met you.

Lack of nerve is another trouble. Nerve exercised in the right direction is a wonderful tonic for business. Here is an example. A photographer whom I know, was experiencing a dull season and actually losing a little money each week, not quite paying expenses. He figured that in six weeks of such business he would lose about five hundred dollars; not a great loss, but a trifle discouraging. After that period he thought that business would be good again. Now, here's where his nerve came in. He had an advertising man arrange two good advertising novelties and a series of five circular letters for his use. All of these he had printed in nice shape and distributed carefully to a few thousand possible patrons at an expense of about two hundred and fifty dollars. Perhaps some of you would figure that this advertising in a dull season would simply put him in bad to the extent of seven hundred and fifty dollars, but he didn't worry about that. Four weeks after his first advertising his business was paying a good profit instead of losing, and from the first week after he started the

campaign, his books showed a favorable balance; then when the good season came along his work went far ahead of the previous year. He took a chance and won. He figured that he had to lose five hundred dollars at the rate his business was running; then he threw two hundred and fifty dollars with it, with the result that his books showed a profit at the end of the six weeks, instead of a deficit. Did it pay?

I would advertise in hard times. Most assuredly. If you are spending one thousand dollars a year in advertising, spend the bulk of it in the dull season. Why? Because it makes your patrons have faith in you. Your competition is less keen because your competitors are not advertising and your advertisements will be read closer. Again, it will serve to keep your help busy and save a deficit in the dull season, which is quite as important as a large profit in busy times. Perhaps, too, if you keep advertising in dull times you will be able to increase your appropriation in good times.

Work ahead. Prepare for your busiest season when times are slow. Such preparation will represent a cash saving eventually, and in calm moments you may develop some ideas of great value which may be put into immediate practice.

How about your office and the general business system of your office? Are you employing too much or too little help? These are pertinent questions with which every proprietor ought to be concerned. If an additional assistant at two dollars per day will earn for your business three or four dollars per day, it is worth so much more to your income to employ that extra help. If, however, each assistant or employee wastes from one to two hours daily, then five assistants will waste the time of one, and probably one may be disposed of, or perhaps, your business may be built up by setting new work for one of them, thus giving more work to the others.

Will a typewriter, an adding machine, new lenses, new cameras, a duplicator or some other device or utility save time, trouble, worry or money? Figure it out, and don't be narrow about it; if it is needed by all means get it, and the sooner you get it, the better it will be for you and your business.

Your business is bound to go wrong if you don't take an occasional plunge. You should be reasonably sure of certain investments, stock or advertising; but you must take chances. Don't hesitate—don't quibble when you feel that you are right. Make the stride before some other fellow "swipes" the chance.

Be broadminded. Try not to get narrow in your views. Listen to the remarks of intelligent people, even if they are younger than you, for it pays to look through the eyes of others at times.

Be careful of your publicity. Make it strong and positive. Make your words sound as though you had every confidence in your photographs and your work. Don't be skeptical or nervous about results. Give your advertising campaign a fair, square chance. If you are advertising in a newspaper, run your campaign for eight or ten issues anyway. Don't get spasmodic in such work; it can't pay. Keep right on the job and make your house, your firm or your name, well known to every person liable to patronize your work; for when your name is on every tongue, your pocketbook will be well filled with the reward that we are all striving to win. But here, let's consider that success in busi-

ness can be no greater than success in life, so there should be set aide, in your daily life, a time for rest, a time for thought and a time for the happiness which ought to be a part of your home life.

Showing Large Proofs

By the Demonstrator

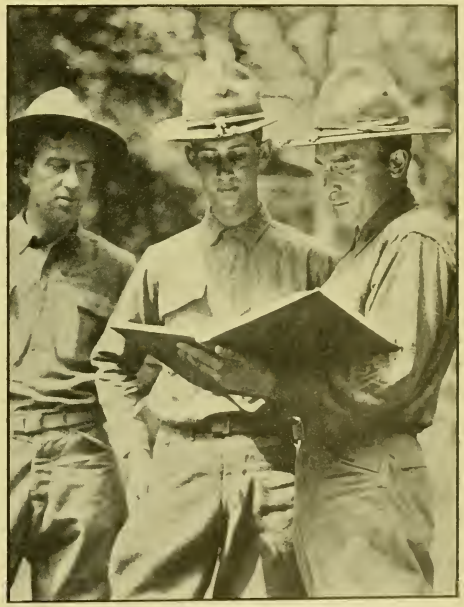
There is a certain professional that I call upon, who has worked out, with the aid of his receptionist, a plan that seems to give the most gratifying results. When the customer first calls, the latter makes no special effort to sell large sizes, further than to show them and quote prices only, as a matter of showing what is available; in fact, if there seems to be any doubt in the customer's mind, the receptionist kindly advises that a small or medium size be considered, because it is quite easy to make enlargements from the small negatives if a larger size be ultimately decided upon. The customer takes very kindly to this somewhat radical change from the overdone urge of large sizes and high-priced work, and the frame of mind so established is a much more desirable one and one more conducive to future good business than the antagonistic one created by even the slightest suspicion of what too often passes as "good salesmanship". The sittings are made, but here is where the plot deepens: instead of making the small negatives, the operator exposes the 6½x8½ plate the studio uses for all its work. When the proofs are shown, all have been made the small size by using the enlarging and reducing camera, while the one or two best ones that the photographer desires orders from, are made full size. Any receptionist or proprietor of any experience can readily see how much easier it is, at this time, to let the customer order the large size, and from the desired negative, particularly if the pictures meet with his approval, than it is to try and force an order for large sizes before the pictures have been made. The imaginary "enlargements" are of unexpected good quality, they suggest that even still further enlargements will be pleasing, and that makes it easier than would otherwise be the case, to get an order for an extra size enlargement or two. Of course, there is an element of deception introduced, but it is one that benefits the customer, even if the smaller size is really all that is wanted, for the reason that the reductions from the large negatives are as good, if not better, than would be the same size of contact prints, and the contact prints from the large negatives are better than enlargements would be, and, of course, just as good as if ordered in the large size at first. All the deception really does is to give the customer an opportunity of changing his original order for small work, to larger, without suffering the penalty of not having so decided at first. It, of course, involves a greater plate expense on the part of the photographer, but as our professional friend advises, the extra cost is well worth the better feeling engendered, to say nothing of the larger orders the plan seems to automatically produce.

Learning to Shoot War Pictures

By Clyde Langsten Eddy
News Photographer Signal Corps, U. S. Army

I am going overseas with a division of hard-swearing, soft-singing men from somewhere south of the Mason and Dixon Line. I am going as a news photographer in the Army Signal Corps, to take pictures for the War College in Washington, and unless I miss my guess these sons of the South will have a hand presently in the making of some news that will be well worth the photographing.

The War College is compiling a pictorial history of the war, and at least three photographers, "movie" and "still", are assigned to each army division to cover the news of, and made by, that division. Now, war photography differs somewhat from the photography of peace times, and the Army Signal Corps has established a school at Columbia University, New York City, where, in a course of six or eight weeks of intensive training, it prepares men with previous photographic experience for work at and behind the front "over there".



THE AUTHOR (AT RIGHT) AS AN INSTRUCTOR

Having had what I considered an ample amount of previous experience as a press photographer, I applied for admission to the school several months ago, and on June seventeenth, 1918, was duly inducted into the service and assigned to the school at Columbia for instruction. The instruction was both military and photographic. Promptly at five-thirty every morning the "top" sergeant's whistle sounded, and about thirty seconds later one hundred and fifty pairs of feet hit the floor in unison. That last forty winks to which the alarm clock of civilian life raised no objection were "taboo", and fifteen minutes after reveille the entire company was up, dressed and standing at attention with the "top" reporting to

the officer of the day that the "Provisional Photographic Company" was "all present and accounted for, Sir".

Speaking of top sergeants: They are the highest ranking non-commissioned officers in the army, and have perhaps more to do with the behavior and efficiency of the men than do the commissioned officers over them. They are the link between the men and their officers, and it is through them that practically all orders are transmitted. Denied the prestige that goes with shoulder bars, and yet compelled to exact instant and unquestioning obedience from the men in the ranks, their's is a particularly difficult job. Not infrequently the "top" is obeyed only because he is enough of a fighter to demand obedience and so it is that there has been developed within the army a number of what the army chooses to call "hard-boiled" sergeants.

More times than one since we began to mobilize our National Army twelve months ago, some newly drafted private has taken exception to a remark made by one of these "hard-boiled" sergeants, and has ventured the opinion that he would surely beat up that sergeant if it were not for the chevrons sewed on his shirt; and more times than one, such a sergeant has obligingly removed his offending shirt, and with it the chevrons, long enough to demonstrate to the recruit, and incidentally the balance of the company, that the word of the "top" is law, and that if need be he can back up his demands with force. Lovers of law and order obey the "top" because they know that he represents the commanding officer of the company, and those who have no such regard for the powers that be, obey him because they have a wholesome respect for the "hard-boiled" character of the man.

We had such a sergeant at Columbia; and, while it did not become necessary for him to enforce his orders at any time while I was there, or offer actual proof to any member of the company that such member did not know the difference between "at ease" and "rest", I am sure that he was big enough and "hard" enough to do so if the occasion had demanded. At any rate, he did not hesitate to tell us frequently and emphatically that we did not know how to stand at "attention"; that we did not know how to "count off", and a few other things, all to the effect that we might, perhaps, be good photographers, but we were most certainly poor soldiers; and perhaps he was right. We never argued the matter with him.

After the sergeant had ascertained that we were "all present and accounted for", and had so reported to the officer of the day, the company was dismissed, and the next twenty minutes was devoted to bed-making and shaving. The former was a simple matter, but the latter was otherwise. There were one hundred and fifty of us, and there was shaving room for about twenty-five; the result was that only those who reached the wash-room first had access to the water, cold at that, the rest waiting until evening, there being no other opportunity until then. The man who thinks that his face is tender, and who knows he cannot shave without hot water, should go into the army. He will find himself mistaken on both points.

Breakfast was at six-thirty, and being served in the University cafeteria, we were, perhaps, the best fed men in the army. Oh, yes: We also had sheets

and pillows and pillow cases on our beds, another feature that placed us in a class by ourselves.

From seven-thirty until eight-thirty each morning, we attended a military lecture and then began the military drills of the day; the time from eight-thirty until twelve being devoted to platoon and company drills, visual signaling and physical exercise. Now, "squads right" and "company left front into line" may seem, at first glance to have very little to do with photography, but it must be remembered that the men in training were in training as military photographers, and therefore a knowledge of the formations may be essential at any time when a picture is being made "over there". Also, the photographer must hike with the troops, eat and sleep with the troops, and if necessary, fight with them. I was not the only member of the company who literally "ate up" the physical exercises in an effort to store up a reserve of strength and endurance against that possible hour when we may be called upon to shoot bullets instead of pictures, and to relinquish our cameras for rifles and bayonets. We were drilled for an hour each morning by a West Point captain, and the way he whipped us into shape was wonderful to see. It does not require many minutes of drilling for a company of men to find out whether or not the officer in charge of it is sure of himself, and certain it is that the Provisional Photographic Company was not long in learning that this captain knew how to handle men. Then, it began to learn things about itself, and the things it learned did not tend to increase its own self-esteem. We learned very promptly that we did not know a great deal about the profession of arms, and having learned that, we began to absorb all the information we could on the subject; and, encouraged by the captain, we did this with some show of speed. For a frank and expressive opinion of a man's ability as a soldier, I would refer you to a Regular Army captain, and for the training required to make that man a soldier I would refer you to that same officer. But, do not go to him if your feelings are easily hurt, or if you are easily discouraged in your undertakings.

WHY AIN'T YOU IN BED ON TIME? THE COAL-PILE FER YOU SON!!
YOU KNOW ME SERGEANT, I WOULDN'T TAKE ADVANTAGE OF YOU FER THE WOILD!
WHAT WHERE YOU'RE LYIN' WITH YOUR MOUTH
TRYING TO FIX IT WITH THE BED-CHECKER

Lunch was at twelve, and the first classes for photographic instruction met at twelve fifty-five. The company was divided into two sections, "Movie" and "Still", and these were further divided into special classes. Each of the four or five motion picture instructors covered practically the same ground and endeavored to review the entire field of motion picture photography in

the limited time allowed them, while the "still" camera men were divided into six classes, each one of which took up different subjects under different instructors.

The "still" camera men studied the following subjects in about the order named, devoting one or two weeks to each subject: The view camera, the Graflex camera, developing, printing, enlarging and lantern slide making, and the Cirkut camera, so that at the end of the period allowed for training the general subject of photography has been pretty well covered.

The instructors, with the exception of the senior instructor, a lieutenant, responsible for the conduct of all the classes, were enlisted men who had been selected for that work because of their familiarity with the particular subjects. Most of these men were privates, drawing not more than thirty-three dollars per month, it being contrary to regulations to give a man any higher rating during his stay at the school. They were appointed "acting" sergeants and given certain privileges to compensate them for the extra work they were called upon to do, but there was no provision made for advancing them in rank so long as they remained at the school.

Both theoretical and practical instruction was given; the students were permitted to take pictures with the various cameras used in army work, as well as print and develop them; his ability or lack thereof as displayed in this practical work, counting for or against him at the school.

The afternoon classes were dismissed at four forty-five, and following "retreat" at five-fifteen, dinner was served. Then, from six-thirty to seven-thirty was the final class room period of the day; a lecture, illustrated or otherwise on some subject pertaining to photography, being given by the photographic officer in charge of the school, one of the instructors, or perhaps, some one from the outside interested in the subject.

Bedtime was at nine forty-five, except on Wednesday, Saturday and Sunday evenings, and everyone except the instructors, was required to be in his bed and covered up when the top sergeant's whistle blew at that time. Woe betide the man who was late, because the bed-checker took his name and he was penalized by being compelled to do some kind of extra duty the following day. Sometimes it was the coal pile, but more frequently consisted of some particularly unpleasant kind of policing around the barracks. A man whose name was once taken usually managed to get to bed on time thereafter.

I had been at the school just two weeks when I was appointed instructor, and two weeks later I was ordered overseas. I am writing this, seated on the edge of my cot in an embarkation camp somewhere in America, and by the time what I am writing appears in print, if such kind fate befall it, I shall be "over there" taking news pictures of the hard-swearing, soft-singing division mentioned in my opening paragraph. The army needs more photographers, experienced ones, and the profession should make every effort to supply the call. The school at Columbia is open only to men with previous photographic experience and the man who enlists there or applies for induction into that branch of the service, may or may not be given a rank commensurate with his abilities when he leaves the school, but there is war on and it is very much our duty to serve whenever and however we may serve.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

FINDING OUT: About a year ago I was in the city, and while there took time to call on one of the photo-engraving shops. I was most cordially received, and when I explained that I wished to learn enough about the work to be able to talk photo-engraving requirements and make the right kind of prints for the process, I was shown every courtesy. I talked with the man who makes the negatives from the copy sent in, and he explained just what his difficulties were. I saw the art-workers and learned what kind of copy best suited their requirements when there was print retouching to be done. The superintendent also added to my general knowledge by a most interesting talk. I was more than repaid for the time spent; and, just the other day was enabled to handle quite a profitable order because of the knowledge gained being just what the customer needed in carrying out his ideas. I was also enabled to recommend the photo-engraving house that had treated me so kindly and everybody was well pleased.—A. S. D., Florida.

BLOTTING OFF NEGATIVES: Removing the surface water before putting negatives to dry is generally done with blotters, but these last, besides being mussy, are inclined to carry dirt or impurities to the wet gelatine film if new ones are not constantly supplied. Some years ago I saw wash leather recommended in the *British Journal,* and I have used it ever since with the greatest satisfaction. Each time before using I wash the leather out in a little warm water in which a pinch or two of soda has been dissolved. This keeps it clean and soft, and it will be found to mop the surface of the negatives entirely free from all superfluous water in a most gratifying way.—G. H. J., Kentucky.

REMOVING YELLOW STAINS: I find that by using hydrochloric acid on a small wad of cotton I could wash those yellow stains that sometimes appear after fixing, right off the print. I have also discovered that I could burn my fingers with the acid, using it full strength as I do, so that care is demanded. Washing in running water completes the operation, and there does not seem to be any danger of fading as a result.—F. K. C., California.

CONVERTING GASLIGHT INTO PRINTING-OUT PAPER: One of our Sumatra readers advises that by placing some cotton wool saturated with ammonia, in the bottom of a cigar box, and then exposing a sheet of gaslight paper to the fumes for from five to fifteen minutes by pinning it to the underside of the lid, the paper is converted into one that can be handled the same as printing-out paper. At least, such is the case with the paper he uses and under the conditions existing with him. Will some of our readers try the matter out and let us have the results of their experiments? We would also

like to know how the prints made by printing-out and toning with the usual solutions compare with prints from the same negative on the same paper worked in the regular "gaslight" manner.—EDITOR.

AN EXCELLENT REDUCER: Particularly well suited to those harsh negatives that some reducers make even more contrasty, is easily made up by dissolving twenty grains of potassium permanganate in sixteen ounces of water and then adding half a dram of sulphuric acid. The potash crystals should be clear and bright, the brown powder rubbed or rinsed off, and the acid should be the regular C. P. of the photographic stockhouse. And furthermore, pour the acid into the solution slowly, while stirring. There is not any particular danger as long as you do not try to pour water into sulphuric acid, when the compound may "kick back" in a disagreeable manner. Immerse negative in this reducer until the desired action has taken place, after which only a good rinsing is necessary before drying. Used on a balled tuft of cotton, it is also good for slight local reduction.—D. F. G., New Hampshire.

REMOVING FILM FROM OLD NEGATIVES: The photographer often finds use for the glass of his discarded negatives and lantern slides, and the question of the easy removal of the film becomes important. The best method I have found, and one I have used for many years, is as follows: Place the plate in a tray of water long enough to moisten the film surface thoroughly, —about half a minute generally, remove and blot off all surface water with a soft cloth. Hold, emulsion side up, with the balls of the thumbs over two diagonally opposite corners, and rub the corners of the film towards the center. You will be surprised how easily and quickly the emulsion coating can be rubbed off, particularly if an acid fixing bath was originally employed. One may have to experiment with the first few in order to learn just how long to soak and how much to dry with the soft cloth; but the "knack of it" is not hard to acquire, and, once gained, the process is simple and enables one to clean off a large number in a very short space of time.—O. C. K., Missouri.

DISOBEYING INSTRUCTIONS: I had part of a box of Autochrome plates left unused for several months. I recently exposed one and started to develop it with the concentrated developer that I got with the plates, diluted according to the instructions, which last I am always careful to carry out to the "T". I do most of the work in total darkness, using, to note progress of development, a pocket flashlamp fitted with "Virida" papers. I flashed the lamp on the plate at twenty seconds, then at thirty seconds, and so on, until a minute had passed, and still no image. As I had taken pains to time the exposure correctly, I judged that the developer was stale, and that following instructions would do no good under the circumstances. In desperation I poured about an ounce of paramidophenol stock solution, which I had at hand, into the three ounces of stale developer I had been trying to use. The image soon began to show and the autochrome was saved. I have not sent for special developer since, using instead my paramidophenol stock solution diluted with an equal quantity of water. I like the pocket flashlamp for inspecting the plates during development, as much less light gets to the plate than when using a dim lamp burning constantly.—E. J. B., Pennsylvania.

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Acetic Acid Less Plentiful

The Chemical Section of the War Industries Board have imposed necessary restrictions upon the sale of acetic acid, with the result that dealers can supply only a portion of the quantity heretofore sold. There is, in fact, a possibility that this chemical may be withdrawn temporarily for photographic use. For that reason it is advisable that the photographer acquaint himself with the substitutes available and with such formulas as do not require it, while giving the same results. Sulphi-Cetic is one of the substitutes that some dealers are prepared to furnish at about thirty-five cents a pound, a pound taking the place of a gallon of the acetic acid. A fixing bath for developing and bromide papers can be made up as follows: Dissolve a pound of hypo in two quarts of water and then add a solution made by dissolving one hundred grains of either potassium or ammonium chrome alum in five ounces of water. This bath keeps well and should fix as many prints as the regular hypo-acid one. Exhaustion will be indicated by a leathery feeling, combined with a sliminess to the touch that indicates the necessity of a new bath. Adding two ounces of sodium bisulphite, or, two ounces of sodium sulphite and half an ounce of citric acid, will improve this bath.

Prints should be quickly and thoroughly rinsed after leaving the developer and before being placed in the fixing bath, and they should be moved about and kept well separated during the ten or fifteen minutes required for fixation. This matter given attention one will find no difficulty whatever in getting along very nicely without his regular supply of acetic acid, at least as far as his fixing baths are concerned.

Get Ready for the New Law

A law was introduced and passed by the House on September twenty-first, imposing a war tax of ten per cent on all photographs, originals or copies, this tax to be figured on the selling price and collected from the customer. The same law imposes a like tax on dry plates, portrait film, kodak film, kodaks and cameras, in stock for resale, but not on such goods on hand for consumption or own use. This law will necessitate an accurate record of all sales and the filing of a monthly report with your Collector of Internal Revenue, together with a remittance to cover the amount of such war taxes as have been collected. This law, of course, requires the action of Congress, but that body has had it under consideration for some time and will, no doubt, act upon it very shortly, when it will go into effect quite promptly, judging from other war measures.

In order that the accurate record that the Government will require can be made out with the least possible trouble and with the minimum danger of any uncertainty, a system of sales records should be installed at once if something

of the kind is not now in operation. The Eastman bookkeeping system, obtainable through any dealer, supplies a means of keeping such a record, one that fulfils the Government's requirements fully. One can, however, arrange his own system or call in a bookkeeper who will advise him as to how the matter should be handled, starting the system so that the photographer has but to carry it along from day to day.

This law, as we pointed out above, also means that you will be asked to pay your dealer an additional ten per cent on certain photographic goods, he turning the amount over to the Collector of Internal Revenue, just as you are required to do in the matter of your own ten per cent additional collected on the photographs sold your customers. So do not blame your dealer for the advance you will be asked to pay when this law goes into effect, and do not fail in being prepared to comply with its requirements in your dealings with your own customers. We, in this country, have been indeed fortunate in the matter of prices on our photographic material generally. Abroad the prices have soared quite materially; I think a recent notice in a British magazine announced the fourth advance in the price of dry plates, and that, if we understand the matter right, independent of any war tax that is being collected upon them as they leave the dealer's hands. Our dealers and our manufacturers have, practically universally, done everything in their power, even to the acceptance of a diminished profit, in order to avoid raising the price of our material, and they have done all they could to keep up with the demand made upon their stocks. It is really quite noteworthy that they have been able to do as well as they have.

Sending Pictures to Those Overseas

The Postoffice Department was requested by the War Department, some months ago, to refuse forwarding of packages for the men overseas, except where accompanied by a written request from the soldier, approved by his major or higher commanding officer. This for the reason that the facilities of the French railroads were sorely taxed in moving forward munitions and more necessary goods. Even the Red Cross, the Y. M. C. A. and other organizations of the kind have not been excepted. This by no means bars photographs or necessitates the securing of a permit to send them in letter mail. They can be sent in that way, and there is little restriction as to the size of such mail, but we should encourage our customers and our friends to confine their overseas sendings of photographs to the smallest sizes. Make the pictures small in size and light in weight, to the end that tons of unnecessary bulk be held back so that the railroads and other transportation facilities may be put to their best use.

One of the most singular gifts, or, if abused, most singular weaknesses of the human mind, is its power of persuading itself to see whatever it chooses; a great fight if directed to the discernment of the things needful and pertinent to its own work and being; a great weakness if directed to the discovery of things profitless or discouraging.—Ruskin.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D.

A New Method of Obtaining Dye-Toned Images by the Use of Copper Ferrocyanide as a Mordant

Although numerous methods have been worked out for toning lantern slides and motion picture films by replacing the silver image either wholly or partially by a colored inorganic compound, owing to the limited number of colored inorganic compounds available, only a very incomplete range of tones can be obtained in this way.

It has long been considered that if the silver image could be converted into a compound capable of fixing or mordanting a dye in proportion to the density of the image this would be the ideal method of toning. Accordingly numerous experimenters have made a deliberate search for such mordants and the first worker to evolve a practical process was Traube, who took advantage of the mordanting action of silver iodide for certain basic dyes, and obtained dye images by first bleaching the silver image to silver iodide in a suitable bleaching bath, and then immersing the bleached and washed image in a solution of the dye. When producing dye images in this way it is necessary either that the dye shall not be absorbed by the gelatine readily, or that it will easily wash out again in order that clear high-lights may be obtained.

Owing to the relatively high opacity of a silver iodide image when produced in an emulsion of average grain size, the dye image obtained in the above manner exhibits very little color when projected, so that it is necessary to remove some of the iodide without removing the dye by fixing in a solution of hypo containing tannic acid and other salts which render the dye insoluble. If all the iodide is removed in this way the residual dye image is usually too thin for projection, though by only partially fixing tolerably good tones are obtained. The action of the hypo is, however, not proportional, attacking the high-lights more than the shadows, so that double tones are obtained.

In view of the above objections to the Traube process, experimenters have attempted to secure transparent tones directly without subsequent fixing, the most recent process being that of Miller (U. S. Patent 100,098), which consists in bleaching the silver image in a mixture of potassium iodide and iodine containing an excess of potassium iodide, with a view to producing a transparent modification of silver iodide capable of mordanting in the usual way.

The following experiments are the result of a systematic search by the author for mordants other than silver iodide which would give a transparent image on projection.

As a result of numerous experiments it was found that an image containing copper ferrocyanide, obtained by toning in the usual copper toning bath, exerted a powerful mordanting action, and was capable of producing excellent dye images.

The usual copper toning bath consists of a solution of copper ferricyanide dissolved in a suitable solvent such as a solution of an alkaline salt of citric, tartaric, or oxalic acids, together with other salts. On immersing the silver image in such a bath the silver reacts with the copper ferricyanide and is converted to silver ferrocyanide, while copper forrocyanide is formed simultaneously in combination with the image.

$$4Ag + 2Cu_3(Fe(CN)_6)_2 = Ag_4Fe(CN)_6 + 3Cu_2Fe(CN)_6$$

On immersing this image in a solution of a suitable basic dye a composite image is obtained consisting of a mixture of silver ferrocyanide, copper ferrocyanide, and the dye. The copper ferrocyanide may be removed from the toned image by treating with a solution of caustic soda when an image consisting of copper ferrocyanide and silver is left, and in turn the silver ferrocyanide may be removed with a ten per cent

solution of hypo, leaving an image of copper ferrocyanide with more or less silver. On immersing the separate copper and silver ferrocyanide images thus prepared in the dye bath after well washing, only the copper ferrocyanide was found to exert any appreciable mordanting action.

The method of procedure was first to tone the silver image in the copper toning bath, wash, and then immerse in the dye bath until the desired color was obtained. The nature of the tone was found to depend on the following factors: The nature of the copper toning bath; nature of the positive to be toned; time of bleaching; time of washing after bleaching; nature of the dyes employed; the adding of acid to the dye bath; time and temperature of dyeing, and, time of washing after dyeing.

The formula for the copper toning bath is given in the instructions for toning. Although many of the usual formulæ for copper toning will produce a dye image, it is necessary that the toned image should be as transparent as possible so as to eliminate the necessity of subsequent fixing. The formula appended gives very transparent tones.

The positive to be toned should be free from hypo so as to remove any possibility of the image being reduced by the ferricyanide in the toning bath. When toning in the copper bath little or no intensification takes place, though as certain dyes, such as methyl violet, are very heavily mordanted, it is necessary to choose a positive somewhat thinner than the average, according to the degree of intensification produced during dyeing. Full details are given in the instructions for toning.

The time of bleaching determines the proportion of copper ferrocyanide in the toned image which reaches a maximum in from ten to fifteen minutes. If only pale tones are required the image is toned for only two or three minutes in the copper bath, while if a full tone is required the copper toning is carried to completion.

After bleaching it is necessary to wash sufficiently long for the soluble copper salts in the toning bath to be removed, otherwise the dye would be mordanted on to the high-lights and stain them. Usually ten minutes is sufficient, though prolonged washing does no harm, since the copper ferrocyanide is insoluble in pure water.

In general only basic dyes are mordanted, and only those which do not readily dye gelatine and which are mordanted by copper salts are suitable for toning by this method. The following dyes have been found satisfactory: Tannin heliotrope, thiofiavine, victoria green, methyl green, methylene blue, and the safranine, chrysoidine and methyl violet, manufactured by the National Aniline & Chemical Company, Incorporated, New York City.

Dyes manufactured by different makers differ somewhat in their behavior towards gelatine and towards mordants, so that it is necessary to make a preliminary trial with each new sample of dye.

Only a very weak dye bath is necessary, and this should not be stronger than 0.1 per cent. A stronger dye bath gives badly stained high-lights, necessitating long washing to clear them, while with a weaker bath the dye is absorbed very slowly or not at all.

The addition of acid to the dye bath has the effect of increasing the rate of dyeing in some cases and of decreasing it in others; in the case of the dyes given above the addition of acid appears to diminish the rate of absorption of the dye by the gelatine, so that by using acid a stronger solution may be employed without the high-lights being stained. If the concentration of the dye is increased to any great extent beyond the amount stated stained high-lights are obtained.

The amount of dye absorbed by the image and therefore the strength of the tone varies with the time of dyeing, reaching a limit in from five to ten minutes. The time of dyeing is also slightly affected by changes of temperature, though slight changes are of no moment.

This varies according to the degree of staining of the high-lights and the fastness of the dye to washing. In the case of the examples below only a mere rinse in pure water is necessary to clear the high-lights, though if the high-lights are stained they may be cleared by washing in a one-fifth of one per cent solution of acetic acid. Too high a concentration of acid in the wash-water should be avoided, otherwise reticulation and frilling of the gelatine is liable to occur, especially if the temperature is above seventy degrees Fahrenheit.

The transparency of the tones is determined by two factors:

The nature of the copper toning bath; the size of the silver grains of the image to be toned and the composition of the bath recommended has been so adjusted as to give the maximum transparency. Previous investigators, however, appear to have ignored the effect of grain size on the transparency of the toned image. Experiments were made with emulsions of varying grain size, and it was found that with lantern slide emulsions of very fine grain such as give warm tones by direct development, very transparent images were produced after toning and dyeing as above without any subsequent fixing whatsoever.

However, a toned image for purposes of projection should not be too transparent, otherwise it lacks brilliancy, so that the tones obtained on, say, the Standard Slow lantern slide plate and on Eastman motion picture positive film by the following methods are satisfactory.

The dye tones recommended proved to be fast to light, no change in color being noticeable after exposure to a quartz mercury vapor lamp for five hours at a distance of eighteen inches.

Since the following toning processes intensify the original image, it is necessary to commence toning with an image of the correct density and contrast. A medium positive, referred to below, is obtained by giving a slight over-exposure and a short time of development, but the exact degree of intensification which takes place in any particular case will be learned after a few trials.

In the case of lantern slides the best and most transparent tones are only produced on slides of fine grain such as the Eastman Standard Slow lantern plate.

For red tone, the positive employed should be a medium one, well washed. This positive should be immersed in the following:

Copper sulphate	250 grains
Ammonium citrate, neutral	740 grains
Potassium ferricyanide	240 grains
Ammonium carbonate	120 grains
Water to	128 ounces

Dissolve each ingredient separately in as little water as possible, mix the filtered solutions so obtained in the order given, and dilute to the required volume. The solution obtained should be light green in color and perfectly clear. The ammonium carbonate should be almost transparent and free from white powder, and should be dissolved in cold water, while the ammonium citrate employed should be neutral. Most samples contain acid, which acid would neutralize the ammonium carbonate and affect the resulting tone. The free acid is usually citric acid, and should be neutralized with a solution of ammonia, using litmus as indicator.

Somewhat warmer tones are obtained by adding fifty per cent more potassium ferricyanide to the formula. With use the bath precipitates a brown sludge of copper ferrocyanide, and in consequence becomes weaker by the loss of copper. Time and temperature of toning; five to fifteen minutes at seventy degrees Fahrenheit. Time of washing; ten minutes.

It is important to keep the bath covered when not in use so as to exclude light, since the bath is light-sensitive, while no foreign metallic surface should be allowed to come into contact with the solution, otherwise the copper salt will deposit on the metal.

After washing immerse in the following dye bath:

Safranine A	60 grains
Acetic acid, glacial	⅔ ounce
Water to	128 ounces

Time of dyeing, five to ten minutes, according to depth of tone desired. Time of washing after dyeing, usually only a slight rinse in water is necessary. If the high-lights are stained the positive should be washed for five or ten minutes, or until clear. Stained high-lights are caused either by insufficient washing after toning, too strong a dye bath, or an incorrect amount of acid in the dye bath.

For orange tone, the instructions are exactly as for red, substituting the following dye bath:

Chrysoidin 3R	24 grains
Acetic acid, glacial	⅔ ounce
Water to	380 ounces

For violet the instructions are exactly as for red, substituting the following dye bath:

Methyl violet	24 grains
Acetic acid, glacial	⅔ ounce
Water to	128 ounces

The depth of the dye tone is determined by the time of immersion both in the copper toning bath and in the dye bath. Pale

tones may therefore be obtained either by giving a short bath in the copper solution and fully dyeing, or by toning for a longer time and giving a short immersion in the dye bath.

By mixing the dye baths given above, intermediate colors may be obtained.

For a pale red tone the positive employed should be a normal one. Tone for one to two minutes in the copper bath, wash for ten minutes, and then immerse in the following dye bath:

Dye solution for red tone, one volume.
Dye solution for orange tone, one volume.

When the desired tone is obtained, rinse until the high-lights are clear.

By first partially toning the black and white positive (medium) in the copper bath so that the half-tones are completely toned, but the shadows only partially, washing for ten minutes and then completing the toning process in a blue toning solution, the residual silver in the shadows is toned blue. In this way a double tone is obtained, the shadows appearing dark blue and the half-tones reddish brown.

By immersing the positive toned in this manner in the chrysoidin dye bath, as given under orange tone, the dye is mordanted to the half-tones which contain copper ferrocyanide, producing a striking double tone effect.

A suitable blue toning bath formula is as follows:

Potassium bichromate	1½ grains
Ferric alum (ferric ammonium sulphate)	75 grains
Oxalic acid	180 grains
Potassium ferricyanide	60 grains
Ammonium alum	300 grains
Hydrochloric acid, 10 per cent.	65 minims
Water to	128 ounces

The method of compounding this bath is very important. Each of the solid chemicals should be dissolved separately in a small quantity of warm water, the solutions allowed to cool, filtered strictly in the order given, and the whole diluted to the required volume. If these instructions are followed the bath will be a pale yellow color, perfectly clear, and will remain so for a considerable period.

The troubles encountered in dye toning are: Stained high-lights due either to insufficient washing after toning in the copper bath, too strong a dye bath, or an incorrect amount of acid in the dye bath; and, weak high-lights or high-lights that do not absorb the dye proportionally, due to the use of an exhausted copper bath or of one that was not mixed correctly.

Lantern slides and motion picture positive film may be toned by replacing more or less of the silver image by a compound of copper, particularly copper ferrocyanide, washing, and then immersing the toned image in an acid solution of a basic dye. The copper salt present in the image acts as a mordant to the dye, and a toned image is thus produced of a color intermediate between that of the dye and the copper compound, depending on the relative proportion of each. The amount of the copper salt necessary to mordant the dye is usually so small that the resultant tone differs but slightly from that of the dye itself.

By employing a mixture of dyes intermediate tones may be obtained, while by commencing with a black and white image of fine grain very transparent toned images are produced.

The author is indebted to S. Tulpan for assistance in carrying out the various experiments.—J. I. Crabtree in a communication from the Eastman Research Laboratory in *British Journal of Photography.*

Working Strength of Amidol

Amidol is extensively employed among professionals, but while a great number agree as to its advantages, there is an amount of dissension as to the best strength and the relative proportions of the constituents for obtaining good results. In some cases the use of amidol is the cause of loss, either through false economy or, more likely, extravagance. To examine every individual formula extant would require much space, therefore something near their average will serve. This would be:

Sodium sulphite	4½ ounces
Amidol	190 grains
Water	80 ounces

A developer compounded as above will prove equal to most requirements, though most formulæ include more amidol. On the other hand, a well known firm of chemical manufacturers reckon that one hundred and forty grains is quite sufficient to the "Winchester", containing eighty ounces, and if my own experience is worth notice, I have cut

it as low as ninety grains; which, with three ounces of sulphite, I found gave good results when printing from hard negatives, two points about it being freedom from the production of "bunged up" shadows and an extremely fine tone obtained on toning in the hot hypo-alum bath. The use of such a weak solution is, of course, not quite so saving as it looks. A "Winchester" of it could hardly be expected to go as far as one at twice the saturation, but it is economical even so, and is also more merciful to the fingers.

To obtain absolutely the best results from amidol, it is necessary to adjust its strength to certain other printing factors, chief among which are, the character of the negative, the candlepower of the printing light, and the nature of the printing paper. Considering the negative, it is manifest that a powerful developer capable of giving a bold result from an over-soft negative, will not be suitable for prints from a "lime and charcoal" one. With regard to candlepower I may be told that it is irrelevant, as one hundred seconds at one candlepower light is equivalent to one second at a light of one hundred candlepower, but I contend that this is wrong. The power of the lamp has an effect on the quality of the print just as it does when enlarging or using printing-out paper.

Two enlargements from the same negative, one by mercury vapor and the other by limelight, will not be of similar quality. Two printing-out paper prints, one done by sunshine and the other printed in the shade or under yellow glass, will not be identical. This difference is apparently due to the stronger or more actinic light being able to penetrate densities that are opaque, or nearly so, to the weaker or less actinic one. Therefore a print by a weak yellow light will tend to be bolder than one from a strong white light unless the developer is adjusted to correct the difference. The emulsion of bromide papers varies and so the solution that will give a rich deposit with one brand of paper may not be the best for another. Usually a slow vigorous paper will need less amidol than a fast soft one.

It is generally conceded that a manufacturer knows his paper better than anyone else, and this being so, the maker's formulæ should be the best. It must be remembered, however, that the other factors are not bound to be the same with maker and consumer, and while the recommended formula is capable of such fine prints from the maker's negatives, it may not give similar prints from a totally different style of negative, and even when it does, there may be no harm in economizing the amidol a little. While giving the manufacturer's directions full consideration, a user should always examine things practically for himself.

When experimenting with the strength of amidol solution it will be found that to obtain different results the amidol must be increased or decreased to a greater degree than the sulphite. Altering both in proportion will only mean dilution, or concentration, and apart from a change in the speed of development, and possibly the rate of contamination, this will have no great effect on the finished result. When increasing the amidol alone it is possible to overdo it; there is a point where more amidol renders the solution inactive; with the amidol nearly at this proportion the developer soon exhausts, but revives on the addition of fresh sulphite solution. It is very doubtful though if any advantage is obtained by using more amidol than that figured in the strongest of maker's formulæ, i. e., two hundred and forty grains to four ounces of sulphite and eighty ounces of water.—THERMIT, in *British Journal of Photography.*

Combination Pictures from One Negative

Necessity is the mother of invention, and in these days of "D. O. R. A." the danger connected with camera work in the open compels the enthusiast to manufacture his pictures from old and discarded negatives taken in the piping times of peace.

Before the war, photographers could afford to be fastidious; the munition factory and allotment plot were not omnipresent, material was reasonable in price, and when a negative did not turn out quite as expected it was rejected, often hastily, since the small cost of the plate was not worth bothering about, and much better results could be obtained by making a fresh exposure than by doctoring failures. But with the present restrictions and prices, a negative becomes an asset, especially when one works in the larger sizes: and the overhauling of one's old stock may well reward the time expended, since many plates must contain matter which,

with a little patience, handwork and imagination, may be coaxed into successful pictures.

In support of this argument I might call attention to a picture before me as I write this. The print, as it is, constitutes a mere record of things rural. The composition is one-sided: the space on the left does not hold the eye, nor are the posts prominent enough to support the big rolling rain cloud. This latter, with the wet path and glistening leaves of the cabbages, provided such a fine study of "weather" that I could not resist making an exposure, despite the lopsided arrangement of the scene, and I relied upon after treatment to pull the picture together. But the method employed was a drastic one. It resulted in the amputation of the overweighted portion on the right and grafting it on the left, with the result which is to be seen in the enlargement that was made as I shall describe.

This procedure caused the pathway to run through the field of cabbages, instead of alongside; and made a capital leading line to the group of trees and buildings, which were now in the proper position to support and balance the big cloud and the picture.

Many a negative can be saved in this or similar manner, and the method of working which I have followed to accomplish these modifications it may be well to describe in detail.

A few rough prints are made and cut up to ascertain where the join had best be made to necessitate the least handwork. When the position is found, the negative is placed in the enlarger, and projected on a piece of thin light-tinted card or stiff paper to the size of the enlargement required. With the aid of the guide print, the dissecting line is then traced on the card by following the image, and a clean cut is made along the line with a sharp pair of scissors, held slightly on the slant, so that the two parts, when joined together and held between two sheets of glass, permit no light to penetrate. If light is let through, it will cause a fine black line in the enlargement; if not, a thin white line will be the result. The mask is then placed on the bromide paper, the right position on the easel is found, so that the join in the mask cuts the projected image in the desired way, one part of the mask is removed, and the paper exposed to that portion of the negative it is meant to carry. After exposure the mask is accurately replaced, and the other portion of the paper uncovered, making the two exposures identical to get the same tone throughout. The transference of the right of the negative to the left of the print, of course, means shifting the paper; and, in order to facilitate this operation a 12x15 printing frame is used to hold the paper, which is then slid across the face of the lens to the extent required. The back of the frame keeps the mask firmly pressed in position against the glass, and when the join of the mask is placed near the hinge of the back the sections can be removed and replaced without difficulty.

After the enlargement has been washed, the joined parts are matched with the thiocarbamide or iodine and potassium cyanide reducer, by following and picking out the design, and the parts to be strengthened are worked up with the brush.

When applying the brush we must not work on the join, but across it, blending it with the surrounding parts; it will then disappear to all intents and purposes, and will not be noticed by anyone who is satisfied with taking pictures in with the eye alone. But, of course, if your circle of friends includes admirers so intensely interested in your work that they want to smell it as well, they will soon detect it when they put their noses to it, and you tell them how and where it is faked. When seen at the proper distance, however, there will be nothing to show that the print was not a simple enlargement from a complete negative instead of a combination of two sections.

The advantage of this manner of building up pictures lies in the fact that there is no risk of turning out a pictorial lie which proclaims its hybrid origin from afar; since all the parts of the combined picture retain their original lighting, tonality, and perspective, as those objects which are shifted are moved in the same plane, parallel to the base of the negative. It enables one to make the combination direct in the enlarger, so that the resulting print retains all the freshness and crisp vigor of the original negative, and will never wear that worried, incongruous look typical of the combination print made of different negatives taken under all sorts and conditions of weather and lighting.—JOHN VANANDEL in *Amateur Photographer*.

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Why the Dark Room?

I get a lot of letters from our readers and through the mass there is a constant streak of regret, first in one place and then in another, that the writer of the particular letter in question is for the time being without the necessary dark-room to do photographic work. Years ago I did quite a little yacht photography, using an 8x10 view outfit as a hand camera, exposing my plate-holder capacity of eighteen plates every Sunday or other holiday that the yachts were out. And all these plates were developed on the center table in the "front room" of a modest little flat that faced a well lighted street, and developed without removing a highly valued table cover or a greatly prized rug that caused the plaintiff in the case much anxiety concerning their safety. A rubber sheet was spread over the table and everything gotten ready under a good light. A good dark-room lamp was used, one that gave no trouble, and a hard-rubber fixing bath was set just back of the two developing trays, ready for the plates as they were developed. It was simply a question of being a little neat about the work, and having a large, soft cloth handy in case a spill did occur. One must remember that the ruby light was a good one and that everything was gotten ready, including two safely corked small bottles of mixed developer in case a new or stronger solution seemed needed before operations were completed. While there was little risk in the good light provided, the ordinary top-heavy graduates were not allowed to take part, thus leaving nothing from which the contents could be spilled except the trays. One tray contained clear water, the next a developer weak in alkali, and the third full strength. If a new quantity of either developer was wanted, it was made by adding the contents of one of the bottles to the tray of water and dispensing with the latter until there was no plate outside the fixing bath and a trip could be taken to the bath-room but a few steps away, where the plate washer was located in the tub, connected up with a piece of rubber tubing. In fact, the fixing bath held only twelve plates, so that a mid-operation trip to the bath-room was always necessary. The simple expedient of pulling down the shades and using a book or something as a weight at the bottom to hold them fairly taut and close, made the room perfectly safe after dark, particularly as I worked with my back to the windows and the plates were in the "shade", as it were. I also used a few old 9x11 card mounts to cover any tray in which a plate might happen to be soaking, and sometimes stood one of these up in front to the light so as to shut off that part reaching the tray immediately in front. The plate had to be lifted for examination and this shade simply meant lifting it a few inches higher.

And all this is simply to show how inconsistent it is for one to deny himself the pleasure of his photographic work simply because he has no dark-room available. True, a dark-room permits of a makeshift light, permits of a cheap flat fixing bath, and permits the worker to put on an apron or an old suit of clothes and slop chemicals all over himself and the surroundings; but a good dark-room lamp and a good fixing bath cost much less than any dark-room, and cultivating a habit of neatness about the work is not such a bad idea as it might seem. If one can handle 8x10 plates in this way, with the old style tray development, it really ought to be quite practical to handle smaller sizes of plates or films by tank development, or make a few gaslight prints, just as easily. In fact, the dark-room has the advantage of allowing one to slop and spill to his heart's content and of being available during daylight hours, something that few of us have any good reason for requiring.

One Beginner's Mistake

These simple little hand cameras with three stops and one shutter speed are occasionally responsible for a quite natural misconception as to the use of the stop. This was again brought to my attention a few days ago by an amateur who had graduated into a class using "a real shutter" on the lens of a more pretentious instrument. With his original camera he had learned or been told that when the landscape was an open one, or when making sea and sky views in a good light, he should use his smallest stop, and that meant to him that the small stop was the one required for that class of views. It had never been explained to him that the small stop was made necessary because there was no quick speed to the shutter on his simple little camera, and that it was advised merely to avoid over-exposure in such cases. The truth of the matter is that just the opposite procedure, as to size of stop, is generally most advisable when the shutter permits of shortening the exposure. The matter of stop size is not one of any particular class of subjects but entirely dependent upon what is wanted. A large stop gives atmosphere, and if used on a fairly near subject, emphasizes by special sharpness the particular plane focused upon. A small stop gives a nearer approach to sharpness all over and an absence of atmosphere that suggests that the view was taken under an enormous bell glass from which all the air had been pumped. The effect of the stop is one that permits of considerable personal choice, and this is one of the factors responsible for the difference that will be found between the pictures of the same scene made by different photographers.

A Cheap Reflecting Camera

One of our recent visitors was an amateur with a number of yachting friends, and, of course, he had a lot of nice little yacht pictures to show us. They were all made with a simple box camera, as he explained, because that kind of a box seemed to answer the purpose as well as a higher priced instrument, and besides, damage from salt air and rough usage was not of so much importance, particularly with the lessened liability thereto. As we all know, the finders on these cameras are not very large and they are somewhat trying when used in bright sunlight, particularly when one is working from the deck of a moving yacht. So our friend took an old, dollar "Brownie" that he had discarded a couple of years before, arranged a mirror in the back and improvised a rough hood above, and with this attached to the top of his larger box-form camera he had all the advantages of a reflecting camera except the focal plane shutter which last he did not really need when working in such a generous light as the water affords. We have not seen the arrangement itself, but the pictures made with the combination are certainly such as would be hard o make without the advantages the reflecting device gives him.

Saving Over-Exposed Prints

We all of us over-expose an occasional bromide enlargement or contact print on gaslight paper, and we try to save it by cutting short the development. According to one of our recent visitors, this last is all wrong. He follows a better plan that he says he thinks he got out of our magazine some eight or ten years ago. Anyway, it is worth repeating, as the prints he showed us had a pleasing pearly softness well worth trying to get for that quality alone. His plan is to develop all over-exposed prints right out to their full strength; fix, wash and dry as usual, and then place aside until a number are ready to be treated. The bath used is composed of two ounces of cyanide of potassium and twenty grains of iodide of potassium in sixteen ounces of water. This should be labeled poison, and so handled. Into this bath the dry prints are immersed; and, as they start to bleach, which is about as soon as they become evenly wetted, they are transferred to a tray of clear water where the bleaching proceeds slowly and evenly. When the desired stage is reached, the bleaching action is stopped by transferring to a ten per cent solution of borax, individual prints being allowed to remain in this last until all have been reduced and immersed in it. A final good washing completes the work. The prints that are produced in this way, that is, by first over-exposing, then developing too dark and bleaching as advised above, have a peculiar quality that is quite pleasing with some subjects and I would advise readers of an experimental turn of mind to give it a trial, aside from its value as a print-saving process.

INTERNATIONAL PHOTOGRAPHIC ASSOCIATION

Officers of the I. P. A.

F. B. Hinman, President, 1369 South Washington Street, Denver, Colo.

J. H. Winchell, Chief Album Director, R. F. D. No. 2, Painesville, Ohio.

Fayette J. Clute, General Secretary, 413-415 Claus Spreckels Building, San Francisco.

Answers to inquiries concerning membership and membership blanks will be supplied by the State secretaries. Album directors are at present acting as State secretaries in such of their respective States as have as yet no secretaries.

John Bieseman, Director Port Card Division, Hemlock, Ohio.

James B. Warner, Director Stereoscopic Division, 413-415 Claus Spreckels Building, San Francisco.

A. E. Davies, Director Western Lantern Slide Division, 1327 Grove St, Berkeley, Cal.

Arthur H. Farrow, Director Eastern Lantern Slide Division, 51 Richelieu Terrace, Newark, N. J.

NEW MEMBERS

4528—Harry Lynn, 206 Delaware Ave., Charleston, W. Va.
2¼x3¼, developing papers, of views and landscapes; for miscellaneous views of general interest. Class 1.

4529—Corey Poest, 58 State St., South, Zeeland, Mich.
Class 3.

4530—James E. Pugh, Elam, Or.
Class 2.

4531—O. A. Silvester, 601 W. 172nd St., New York, N Y.
Class 3.

4532—John Morrow, General Delivery, Greencastle, Ind.
1⅝x2½ to 5x7, developing papers, of buildings, landscapes, figure studies and a few nudes; for figure studies, nudes, and anything interesting. Class 1.

4533—Francescato Feruccio, care Giuliano, Ybrahimich Ramleh, Alexandria, Egypt.
From 9x12 up to 30x40 centimeters, contacts or enlargements, various papers, of landscapes, scenes of life and work, interesting views of Egypt (either prints or lantern slides); for landscapes, country life (prints only) and art portraits and nudes. Class 1.

4534—M. Austin King, Canyon, Texas.
2¼x4¼ and 3¼x5½, various papers, of West Texas ranges and miscellaneous views; for miscellaneous views. Class 1.

4535—Hugo J. Engel, Route 2, Box 46, New Braunfels, Texas.
2¼x3¼, 2½x4¼ and 4x5, various papers, of scenery, public buildings, scenes, farm scenes, children at play, etc.; for geographical, scenery and new and curious things that happen. Prints only. Class 1.

4536—Arthur Van W. Eltinge, 202 Green St., Syracuse, N. Y.
Enlargements up to 8x10, various papers, of general views. I print in sizes seldom less than 5x7, and while a similar size will be appreciated in exchange, the size is immaterial, quality will be considered first of all. I desire general views, work of real picture quality, serious work suggestive of high ideals. Class 1.

4537—L. Woods, 2140 Santee St., Los Angeles, Cal.
3¼x5½, 5x7 and 6½x8½, various papers, of general views; for the same. Class 1.

4538—C. A. Welander, 1226 6th Avenue, Moline, Ill.
Class 2.

4539—Albert A. Dobson, Ivy House, 56 Acacia Grove, New Malden, Surrey, England.
Full size stereoscopic and sterolette, various papers, of general views, flowers, animals, still life (not bathing girls or figure studies); would take special views if requested and possible; for bathing girls, figure studies, and anything of interest to an English reader. Stereoscopic views only. Class 1.

4540—John Stimpfl, 13 Astor Place, care Alexander Hamilton Institute, New York, N. Y.
2½x4¼, developing papers, of landscapes and miscellaneous scenes; for the same and mountain scenery. Class 1.

4541—J. Frank Mehl, 114 W. Swissvale Ave., Edgewood Park, Pittsburgh, Pa.
Class 2.

4542—Percy H. Greene, Villard Ave., Carman, Manitoba, Canada.
Class 2.

RENEWALS

2009X—Dr. Chas. F. Meacham, Bellows Fall, Vt.
Post cards only. Class 1.

3676—C. R. Lowe, Dakota City, Nebr.
9x12 centimeters, smaller, and enlargements, various papers, of birds, small animals, some flowers, general views, some Philippine Island stuff, etc.; for anything that interests me; fuzzies, portraits, groups, do not interest. All work sent and received on approval. Enjoy correspondence. I get interesting stuff from friends not in the exchange game and offer you that, too. Class 1.

3996—Paul M. Elder, Box 155, Spirit Lake, Idaho.
Class 2.

4174—Aug. Gaarz, 608 Mansfield Road, Cleburne, Texas.
5x7 and smaller of figure studies in nude and semi-nude; for the same. Class 1.

4413—Wilfred Hickman, R. F. D. No. 1, Fairmont, Ill.
Class 2.

4414—Oscar C. Kuehn, 3405 Caroline St., St. Louis, Mo.
3¼x5½, 4x6 and 6½x8½, developing papers, of views of Missouri Botanical Garden, flower studies, landscapes, park views, etc. Also pinhole work; for any of the above subjects. Good work only sent or received. Post cards only unless otherwise agreed. Class 1.

4431—W. C. Settgas, 526 Flatbush Avenue, Brooklyn, N. Y.
Class 3.

4433—John Y. Owsley, 19 Hillcrest Apartments, Salt Lake City, Utah.
2¼x3¼, 3¼x5½ and enlargements, developing papers, of woodland, mountain, street and snow scenes, also views in Mormon Temple Square; for anything worth while. Class 1.

CHANGES OF ADDRESS

2990—James L. Vaughan, Box 89, Kensington, Ohio.
(Was Summitville, Ohio.)

4444—A. W. Ruck, Cedarburg, Wis.
(Was Denver, Colo.)

4447—G. W. Grant, 3817 East 14th St., Oakland, Cal.
(Was Jamestown, Cal.)

WITHDRAWAL

4515—Andrew Onniston, Firestone, Colo.
Deceased.

CLUB NEWS AND NOTES

Club Secretaries and others will oblige by sending us reports for this Department

Chicago Camera Club

The Rowleys gave a most interesting travelogue covering the Canadian Rockies, the Grand Canyon, Yosemite Valley and Southern California, before the members and their friends, on the evening of October fourth. Mr. Rowley's camera work was of the highest order, as attested by the beautifully colored slides, while the charm that Mrs. Rowley put into her interesting talk merited much praise. During the month the members went one evening, in a body, to the Academy of Fine Arts, viewed the work of the pupils and listened to a lecture given before the life class. Nearly all of the meetings have been cancelled by reason of the "Flu-lid", but interest maintains, as shown in the attention given the superb collection of carbon prints making up the individual exhibit of William A. Guyton, Jr., a local pictorialist whose work has received most favorable comment from the press of the city. The club is in accord with the splendid idea put forth by the Portland, Maine, Camera Club, and will co-operate with it and other clubs in the exchange of what will be known as "My Best Print" collections. These exhibits should prove a great stimulus to pictorial work by the members of all the clubs fortunate enough to share in the carrying out of the plan.

Boston Y. M. C. A. Camera Club

Pictorial photography has become a matter of deep interest to Boston amateurs who are giving it an increased amount of attention; and, in accordance therewith, the Camera Club at the Boston Y. M. C. Union has arranged a series of one-man exhibits on the walls of its rooms at 48 Boylston Street, open to the public on Wednesday evenings and Saturday afternoons. Each exhibit will consist of about twenty-five pictures, the work of some pictorial photographer of the foremost rank in this country. The work of John Paul Edwards of Sacramento, Doctor Rupert Lovejoy of Portland, Maine, and Dwight Davis of Worcester, Massachusetts, has already been shown, eliciting keen interest and high praise. For the remaining six months of the season, beginning with the current month, December, the program announces the following exhibitors in their order: Francis O. Libby of Portland, Maine; Arthur Hammond of Boston; John H. Garo, Boston; Annual Exhibit by Club Members; Arthur F. Gales of Los Angeles; and, Edward H. Weston of Tropico, California.

OUR BOOK SHELVES

"The Koehler Method of Physical Drill"

Captain Wilbur, the author, has been fortunate enough to have served two years as Major Koehler's assistant at the West Point Military Academy, absorbing the enthusiasm of his superior officer in so doing, and in this book he transmits much of the same mental attitude to his readers. And the instructions given are such as make physical drill a pleasure, aside from its importance in the making of good soldiers, better citizens and more robust children. The Koehler method of drill needs no introduction to those informed on the subject. West Point men make up the finest body of soldiers in the world, they are so acknowledged, and the system of physical drill or training there employed needs no further commendation. The book is complete, comprehensive and well illustrated. The author has kept in mind not only the training of our army, but the use of the book in schools and by the civilian, either individually or in athletic clubs and the like. Published by J. B. Lippincott Company, Philadelphia. Price one dollar net.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

Since Ray Winters' partner was made one of Uncle Sam's men, the Multnomah Photo Supply Company has employed two young ladies,—one henna and the other natural. Ray now does the sweeping out.

G. A. Lindsay, the big jovial Scotchman that travels for the Ansco Company, has become a liquor artist; that is to say, in the same sense as we speak of a landscape artist or the like. He was recently selected by the police department of Portland as the one best fitted to photograph the liquors taken up in that "bone dry" state.

H. R. Brinsmead of Reno is as busy as the proverbial bee. We hope he is gathering a correspondingly gratifying supply of "honey".

W. Frank Goodner of the same town has found it necessary to engage another assistant.

Word reaches me that Mr. Kirkpatrick, the star operator for James & Bushnell of Seattle, poses as being quite a hunter. He recently went out with Mr. Deacon and Mr. Held of the Northwestern Photo Supply Company, both of whom got a good supply of ducks, while Kirk made the excuse that they would not sit still long enough for him. The one bird he brought home he presented to "Premo" Richardson, and that appreciative appanagist took it to his favorite chef to be cooked for his dinner, only to find that Kirk had slaughtered the great-great-grandfather of all the sage hens in the Northwest. Kirk really needs a new pair of glasses.

Harry Shipler of Salt Lake recently drove over to the Yellowstone, returning to business on November first. He reported the fishing as excellent.

L. F. Griffith of the same city showed us some wonderful pictures of Griffith Junior, who is, in turn, the picture of his mother. Lucky kiddy.

H. P. Saubert, with Marsh & Company, has left for Columbia University, New York, where he will qualify as photographer in the Signal Corps, under Major Underwood and Captain Hance. H. E. Burns, Mr. Saubert's assistant, succeeds him as manager.

C. D. Ford is now located in Ogden. Many Californians will remember him as having been at Salinas and with the Bushnell Studio here in days gone by.

C. W. Preston, now in charge of one of the Owl Drug Company's stores in Seattle, is one of the best posted photographic stock men in the Northwest.

Hazel Elaine Reeves has charge of the photographic department in the Owl Store in Seattle. She is not only an excellent saleslady, but a very fine color artist as well.

G. C. Turpin of Seattle has put the Bartell Drug Company's photographic department in a class of its own.

V. R. Trine of Woodard, Clark Company, Portland, looks the same happy-go-lucky chap as ever.

Miss Grace Babcock has joined the Woodard, Clark forces, officiating in the photographic department with her usual vivaciousness and good salesmanship.

Our Apologies to Minneapolis

You saw that advertisement of the Whirlo Print Washer, that very satisfactory time and labor saver that the Northern Photo Supply Company inserted in the last issue; possibly you had the initiative and the appreciation of a good thing necessary, in order one. If you didn't, you should, should do both, look up the advertisement and send in your order. And while you are looking over the advertisement, notice that it mentions another almost equally celebrated town where it should have said "Minneapolis" in the body of the advertisement. Manufacturing facilities in Minneapolis are second to none, and manufacturers in that progressive city are not in the habit of advertising any other town, so the mistake in the advertisement will have to be blamed on the printer, I guess. He can't help himself and is used to being

blamed that way. The mistake may have been made right here in our own office, but we are not going to bother looking it up. A much more serious mistake is made by the reader who fails to investigate the advantages of this meritorious utility, so well calculated to save his time and costs, when they are pointed out to him. The same firm advertises another "worthy of consideration" in the present issue. Look that up also.

Mr. Lion's Home Address

Enno Lion has severed his very pleasant relations with the firm of Henry G. De Roos, this city; and, to the end that those desirous of getting in touch with him may do so with the least possible trouble, advises that his address for the present will be at his home, 250 Twelfth Avenue, San Francisco.

School Opening Postponed

As the reader knows, the epidemic has resulted in the closing of the schools and, of course, the opening of the regular courses, those announced by the new Pacific School of Fine Arts Photography, have had to be postponed. At the present it is thought best to defer the commencement of these courses until the first week in January, as quite a number who have enrolled, or who contemplated doing so, have expressed a desire that the classes do not start until after the holidays, now that the closing of the schools has prevented the opening as intended. This will give those interested an opportunity of getting fully in touch with the school, doing so by writing in response to its advertisement appearing on another page.

"The Other Fellow" Excuse

One of the whining complaints which the officials of the Food Administration have to mect most often in these days of saving and sacrifices is the one voiced by the man or woman who thinks he should be released from his share because a neighbor across the street or next door is cheating his Government by not living up to the regulations.

"I'm perfectly willing to go without wheat flour and have only one teaspoon of sugar in my coffee, but I don't understand why I should deny myself just so that person can have all the wheat and sugar he wants"; so runs the plaint.

It is because there are food slackers along with profiteers and other scum, willing and ready to make dollars out of the agonies of the nations of the earth, that food rulings have to be made. It is because some selfish, inhuman creature who walks the earth in the shape of man declares, "I will eat what and when I want to, despite the fact that babies of Belgium die with the torture of starvation, and the Hun beats back the allies' armies because they lack food"; it is because of this that most Americans must save harder and sacrifice longer.

Let the man who claims, when brought before the Food Administrators for violations, "The other fellow was doing it", remember that other "fellows" are leaping from mud and blood-soaked parapets to face a shower of Hun bullets and to stop with their bodies the razored bayonets of the enemy. It is an excuse which doesn't go.—*Federal Food Administration for Colorado.*

Developers That Are Right

From reports that have reached this office we believe we are perfectly safe in recommending most highly the several products of the Special Materials Company, with factory in Brooklyn, New York, now being handled by Hirsch & Kaye of this city, Pacific Coast Agents. In fact, these reports have been reaching us for a number of months, but only the recent enlargement of the factory made it advisable to mention them. We would not like to repeat some of the flattering praises accorded these developers for fear of being considered entirely too enthusiastic, but these developers are certainly giving such satisfaction with continued use that the photographer, looking for something to take the place of the pre-war metol, amidol and the like, can feel that his search is ended. Get in touch with Hirsch & Kaye; try these chemically pure photograph developers, and you will be pleased with the results.

Preventing Print Curling

One part alcohol, four parts water and three parts of glycerine, will make a bath in which prints can be immersed directly from washing, with the result that after drying they will have little or no tendency to curl, even under trying atmospheric conditions. The tendency of the glycerine is to keep the print slightly damp, or rather, from getting too dry, and therefore the prints should be as free as possible from any inclination to fade through insufficient washing or fixing.